Ground-Water Conditions in the Mendota-Huron Area Fresno and Kings Counties, California

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1360-G

Prepared in cooperation with the California Department of Public Works, Division of Water Resources

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By G. H. DAVIS *and* J. F. POLAND

CONTRIBUTIONS TO THE HYDROLOGY OF THE UNITED STATES

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GROUND-WATER CONDITIONS IN THE MENDOTA-HURON AREA, FRESNO AND KINGS COUNTIES, CALIFORNIA

By G. H. Davis and J. F. Poland

ABSTRACT

The Mendota-Huron area of this report includes 1,300 square miles on the central-west side of the San Joaquin Valley, Calif., extending from the Fresno-Merced County line southward to Tulare Lake Bed.

Use of ground water for large-scale irrigation began in 1915 and expanded until the late twenties. Development of irrigation was slow in the thirties but was accelerated by the high prices for crops during the second World War and has continued to expand rapidly since 1945. The number of irrigation wells in the area increased from about 300 in 1941 to about 1,000 in 1951. Pumping draft from the area in acre-feet per year increased from about 100,000 in the early thirties to 1,000,000 in 1950–51 and 1,200,000 in 1952–53. The heavy and increasing draft on ground-water supplies has been far in excess of replenishment, and water levels have been declining at a rapid rate, especially since 1945.

Because of the need for importation of surface water to make up the deficiency in supply, the present investigation of ground-water conditions has been made at the request of and in cooperation with the State of California.

Field activities in this study included a canvass of wells, collection of logs, water-level measurements, and collection of water samples for chemical analysis.

The deposits containing fresh water beneath the Mendota-Huron area are of Recent to Pliocene age. They extend to depths ranging from less than 1,000 to at least 3,000 feet below the land surface. They can be divided into an upper unit of clay, silt, and sand, chiefly alluvial-fan deposits of heterogeneous character, that is chiefly of Quaternary age; a middle unit consisting of an impervious diatomaceous clay of probable late Pliocene age; and a lower unit of clay, silt, and sand, in part lacustrine deposits, that extends down to the beds containing saline water. If the overlying diatomaceous clay is of late Pliocene age, the lower unit is wholly of Pliocene age.

A body of semiconfined ground water, the upper water-bearing zone, occupies most of the upper unit. This upper zone is of low to moderate permeability. Locally, southeast of Tranquillity, it is the principal source of ground water for irrigation. Elsewhere, the upper zone yields water chiefly to wells that tap the lower zone as the principal source but are perforated or leaky in the upper zone.

The body of ground water in the lower unit, the lower water-bearing zone of this report, is confined almost everywhere by the diatomaceous clay. Probably 80 percent or more of the irrigation draft is from this lower zone.

A body of brackish to saline water underlies the lower water-bearing zone throughout the area.

Movement of ground water in both the upper and lower water-bearing zones initially was from the foothills of the Coast Ranges on the west toward the axial

trough of the valley on the east. Hydraulic gradients were gentle—a few feet to the mile. In most of the area the gradient in the upper zone still is toward the valley axis, although locally in the area of heavy pumping from that zone southeast of Tranquillity the water levels have been drawn down sufficiently to develop a gradient westward from the axis.

In the lower water-bearing zone, the heavy pumping draft has drawn down the piezometric level as much as several hundred feet in the past 20 years. In 1951 the confined water in the lower zone was moving from the east and northeast into an elongate pumping depression which extended the full length of the Mendota-Huron area and whose axis was only 4 to 6 miles east of the western edge of the valley.

The decline in the piezometric level of the lower water-bearing zone since large-scale irrigation began during the first World War has ranged from 150 feet near Mendota on the north to roughly 300 feet in the vicinity of Huron on the south. Most of this decline has occurred since 1940. Since 1945 the average rate of yearly decline has been 4 to 7 feet in the northern part and 20 to 30 feet in the southern part of the area. In 1951 the pumping lift in the Mendota-Huron area ranged from 100 feet below the land surface near Tranquillity to more than 700 feet near the mouth of Cantua Creek; the average lift to the land surface was on the order of 400 feet.

Under natural conditions the only appreciable source of recharge to the ground water was by seepage from streams on the west side of the valley; the average long-term seepage is estimated as 30,000 to 40,000 acre-feet a year. Drawdown of the water levels, especially the piezometric level of the lower water-bearing zone, has developed a westward gradient of as much as 15 feet to the mile (1951), and ground water now is moving southwestward beneath the axial trough of the valley. Thus, the lower zone is receiving induced or secondary recharge from the eastern side of the valley along the full 71-mile reach of the Mendota-Huron area. It is estimated that, in 1951, the secondary recharge to the lower water-bearing zone from the northeast was 150,000 to 200,000 acre-feet a year.

Secondary recharge to the upper water-bearing zone by westward movement from the axial reach to the area of sustained pumping from that zone is estimated as 20,000 to 30,000 acre-feet as of 1951.

Thus, the secondary recharge from the northeast to both water-bearing zones of the Mendota-Huron area is estimated as on the order of 200,000 acre-feet in 1951. If added to the primary recharge from west-side streams, the total recharge in 1951 was roughly 230,000 acre-feet.

Based on estimates of consumptive use by crops, the net ground-water draft in 1950–51 was on the order of 600,000 acre-feet, or 60 percent of the gross pumpage. The indicated overdraft in 1950-51 thus was on the order of 350,000 acre-feet. In 1952–53 pumpage had increased to 1,240,000 acre-feet, and, if consumptive-use requirements remained constant at 60 percent of the water pumped, they were roughly 740,000 acre-feet as of 1952–53. Imports sufficient to satisfy a consumptive use of at least 700,000 acre-feet would be indicated, plus additional requirements to compensate for outflow and to provide for salt balance.

The chemical quality of the waters in the Mendota-Huron area is fairly consistent within each water-bearing zone but is markedly different between the two zones. Ground waters of the upper water-bearing zone generally have high concentrations of calcium and magnesium sulfate. Waters below the 300-foot depth and above the top of the diatomaceous clay show a general vertical decrease in dissolved solids, an increase in percent sodium in the deeper waters, and a decrease in hardness. Locally, waters have greater concentrations or are of different types. The chemical quality of the water in the lower water-bearing zone is fairly con-

stant, if wells tapping only that zone are considered. Most of it is of the sodium sulfate type.

INTRODUCTION

LOCATION AND GENERAL FEATURES OF THE AREA

The Mendota-Huron area, as identified in this report, includes that part of the west side of the San Joaquin Valley extending from the Fresno-Merced County line on the north to the northwestern margin of Tulare Lake Bed on the south and from the axial trough of the valley, marked by the line of the San Joaquin River, Fresno Slough, and the Kings River, on the east to the foothills of the Coast Ranges on the west. Its location is shown on figure 66 and general features are shown on plate 29. The area is approximately 72 miles long,

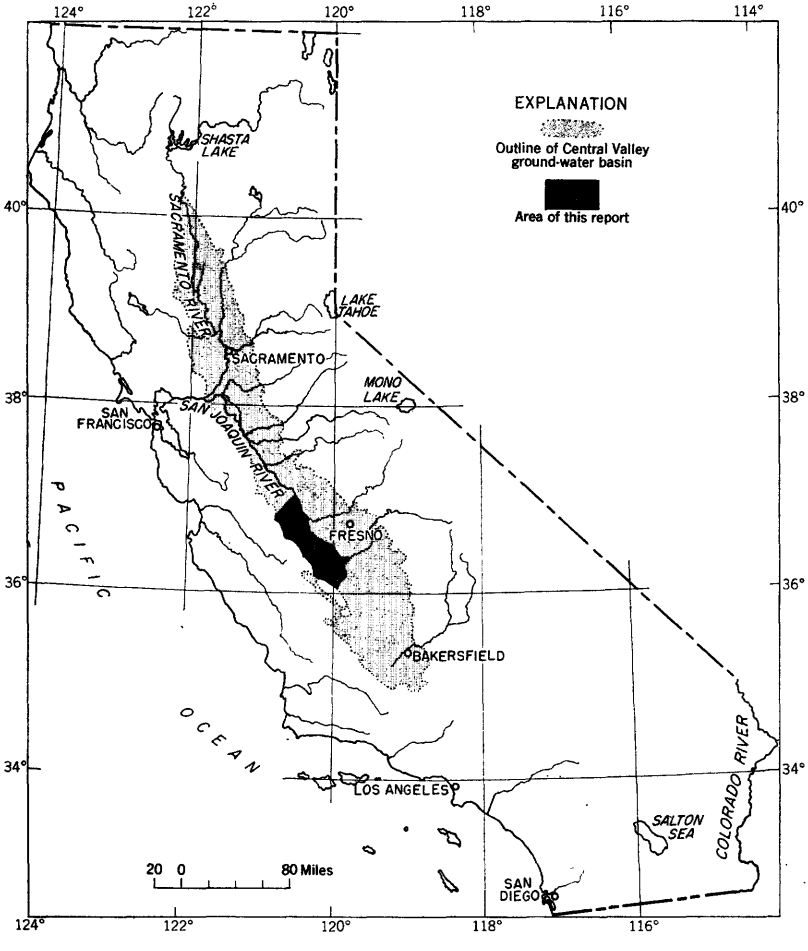

FIGURE 66.—Map of California showing area of this report.

averages 18 miles wide, and embraces about 1,300 square miles, or 830,000 acres. Most of the area is in Fresno County except for a narrow strip at the south end, which is in Kings County and includes 90 square miles.

Ground water is contained in permeable beds in alluvial deposits of Pliocene to Recent age which underlie the west-side plain. These alluvial deposits extend to depths ranging from less than 1,000 feet to as much as 4,000 feet below the land surface and in their lower part contain water of extremely poor quality. The ground-water basin appears to be a single unit extending on the north into Merced County, on the west to the tilted impermeable Tertiary marine sediments that crop out in the Coast Ranges, and on the south and east to and beyond Tulare Lake Bed and the axial trough of the valley, respectively. Fresh water is found to depths ranging from 900 feet to more than 3,000 feet beneath the land surface.

Originally the Mendota-Huron area was used principally for sheep grazing. In the 1890's, during a period of above-normal rainfall, several farms were settled in the vicinity of Huron (Mendenhall, Dole, and Stabler, 1916) but they were abandoned after a few dry years. It was customary to plant grain in large acreages in the autumn; when rainfall was sufficient, large crops were harvested. Large-scale irrigation with ground water began during the First World War with the drilling of wells to irrigate several thousand acres near Westhaven by the Boston Land Co. and the settlement of the Oro Loma Colony near the Fresno-Merced County line. Irrigation expanded rapidly during the early twenties, but a general low level of commodity prices in the latter part of that decade and in the early thirties discouraged further expansion. After 1936 expansion of irrigation was resumed and irrigation pumping increased rapidly. (See fig. 68, p. 440.) High commodity prices after the close of World War II in 1945 brought a tremendous expansion of farming by irrigation which has continued through 1953, and nearly all available land has been placed under irrigation now.

A serious overdraft on the ground-water supply now exists and water levels have been declining at a rapid rate throughout the area. In order to make up this deficiency in natural supply, both the U. S. Bureau of Reclamation and the California State Water Project Authority have proposed construction of large canals to import surface water to the area from the Sacramento-San Joaquin delta. The building of a canal proposed by the State Water Project Authority was authorized by the State Legislature in 1951 as part of the Feather River project and preliminary studies are now under way by the California Division of Water Resources.

SCOPE OF THE INVESTIGATION AND PURPOSE OF REPORT

In November 1949, through conferences between the United States Geological Survey and the California Division of Water Resources, it was agreed that the Geological Survey, as part of its cooperative ground-water program with the State, would make a ground-water investigation on the west side of the San Joaquin Valley, from the Fresno-Merced County line to the south end of the valley. First attention was to be given to the area of heavy and increasing ground-water draft north of Tulare Lake Bed.

The objectives of the ground-water studies on the west side of the valley included: study of source, movement, and disposal of ground water; estimates of overdraft and perennial yield; study of geologic and hydrologic possibilities for additional recharge of the ground-water basins; and study of quality of water with special reference to distribution of zones of inferior quality that may affect recharge problems.

Field investigation on the west side of the valley was begun by the Geological Survey in March 1950, and was carried on into the early part of 1952 when the scope of the cooperative program with the State in the San Joaquin Valley was enlarged to include a reconnaissance study of the entire valley south of the Stanislaus River. The present report deals with the northern part of the west-side area, specifically the area in Fresno and Kings Counties between the south line of Merced County and the western edge of Tulare Lake Bed, herein described as the Mendota-Huron area.

The work has been accomplished in part through funds made available jointly by the Federal Government and the State for the cooperative program, and in part by Federal funds supplied for study of ground-water problems in the Central Valley.

The purpose of this report is to present and interpret briefly available data on ground-water occurrence and development in the Mendota-Huron area; the change in water levels that has occurred in response to the heavy pumping; the general magnitude of recharge; the general magnitude of overdraft or the water being mined; and the general chemical quality of the ground water, with special reference to recharge possibilities. Almost no hydrologic work had been done in the area prior to the Geological Survey's study, and a large amount of basic data had to be collected before a reasonably detailed picture of the hydrologic and water-quality conditions could be obtained.

The investigation has been made under the supervision of J. F. Poland, district geologist in charge of ground-water investigations in California, and under the general direction of A. N. Sayre, chief, Ground Water Branch. George H. Davis was in charge of the inves-

tigation and has prepared most of this report. The field work was done by William Back, D. W. Brown, P. R. Wood, R. S. Stone, M. E. Cooley, and W. J. Hiltgen, and assistance in preliminary phases of parts of the report was given by P. R. Wood (character of water-bearing deposits), D. W. Brown (water-level contour maps), and R. S. Stone (chemical quality of waters).

ACKNOWLEDGMENTS

The collection of data for this report and the success of the investigation were made possible to a great extent by the cooperation of public agencies and private companies and individuals. Water-level data and electric logs furnished by the U. S. Bureau of Reclamation were most helpful. The California Division of Water Resources furnished personnel to assist in water-level measurement and water-sampling programs. Results of pump-efficiency tests and data on pumpage furnished by the Pacific Gas and Electric Co. made possible the quantitative estimates of pumpage, recharge, and overdraft. Mr. Charles S. Sorter, engineer of the Peerless Pump Division of the Food Machinery and Chemical Corp., made available much valuable information on well casings and perforations. The late Marshall Bond, manager of the Boston Land Co., kindly furnished early reports on the Westhaven area from the files of his company. Acknowledgment is also due the many land owners in the area for furnishing basic data and allowing access to their property and wells.

WELL-NUMBERING SYSTEM

The well-numbering system used by the Geological Survey in the Central Valley shows the locations of wells according to the rectangular system for the subdivision of public land. For example, in the number 14/15–18E1, which was assigned to a well 2½ miles south of Mendota, the part of the number preceding the slash indicates the township (T. 14 S.); the number following the slash, the range (R. 15 E.); the digits following the hyphen, the section (sec. 18); and the letter following the section number, the 40-acre subdivision of the section as shown in the accompanying diagram.

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Within each 40-acre tract the wells are numbered serially, as indicated by the final digit of the number. Thus, well 14/15-18E2 is the second well to be listed in the SW¼ of the NW¼ of sec. 18. As all the Mendota-Huron area is south and east of the Mount Diablo base and meridian the foregoing abbreviation of the township and range is sufficient.

LAND FORMS AND DRAINAGE

The Mendota-Huron area lies entirely within the physiographic province defined by Jenkins (1943, p. 83) as the "Great Valley of California." It is bordered on the west by the southern Coast Ranges and on the southwest by the Kettleman Hills, a low range of hills that is structurally related to the Coast Ranges and is included in that physiographic province (Jenkins, 1943, p. 87).

The land surface of the Mendota-Huron area is a broad apron of coalescing alluvial fans deposited by the minor streams that drain the eastern slope of the Coast Ranges and flood-plain deposits of the San Joaquin and Kings Rivers laid down when those streams were in flood. The alluvial fans of the west side rise 10 to 25 feet to the mile from an altitude of about 200 feet at the valley trough to about 400 to 500 feet at the southwest edge of the valley. The axial trough of the valley slopes both northward and southward from the vicinity of the dry Summit Lake Bed which lies on the divide between the San Joaquin River drainage basin and the Tulare Lake drainage basin (pl. 28). From 207 feet above sea level at the divide, the land surface slopes southward about half a foot per mile to Tulare Lake Bed and northward 1.2 feet per mile to the confluence of Fresno Slough and the San Joaquin River near Mendota. From Mendota north along the San Joaquin River to the Fresno-Merced County line, the land-surface gradient is approximately 2 feet per mile.

Several streams, principally, Little Panoche and Panoche Creeks, Arroyo Hondo, and Cantua, Salt, Martinez, Domengine, Los Gatos, and Zapato Creeks cross the area from the foothills of the Coast Ranges toward the valley axis. However, the Coast Ranges farther west rise to heights of more than 3,000 feet and create a natural rainfall shadow on the eastern slope of the mountains and on the west side of the valley. Consequently, the west-side streams are intermittent and carry little water (p. 443).

FIELD PROGRAM

CANVASS OF WELLS

Field work by the Geological Survey began in March 1950; by October 1951, the field canvass had been completed and brought up to date for the entire area. In all, 1,712 wells or well sites were visited in the Mendota-Huron area. The canvass furnished the following in-

formation, so far as available: location, owner or lessee, land-surface altitude, driller and date drilled, depth, casing diameter, perforation data, type and size of pump and motive power, transformer and meter number, water level, log, and chemical analysis of the water. Locations of canvassed wells are shown on plate 29, and information and chemical analyses for 803 wells in use when visited in August and September 1951 are tabulated on pages 467–585.

Of the 1,712 wells canvassed in the Mendota-Huron area in 1950–51, 1,022 are classified as irrigation, 10 as public supply, 103 as domestic, 38 as industrial, 50 as stock, and 489 as unused or destroyed. The power rating of the pumps for irrigation wells ranges from 30 to 300 horsepower and the yield of the wells from 250 to 2,000 gallons per minute (gpm), averaging on the order of 1,100 gpm. In general, the smallest yields are from wells that were drilled prior to the use of gravel packing. The largest yields are from gravel-packed wells, especially in the area north of Five Points.

WATER-LEVEL MEASUREMENTS

In the course of the investigation about 20,000 water-level measurements made by other agencies were assembled by the Geological Survey. These were obtained from the U. S. Bureau of Reclamation, the Pacific Gas and Electric Co., and the Boston Land Co. The earliest water-level measurements in the Mendota-Huron area were made in 1905 by the Geological Survey (Mendenhall, Dole, and Stabler, 1916). Some 81 water wells in the area, mostly shallow stock and domestic wells, were measured in the course of a well canvass which covered the whole San Joaquin Valley.

H. L. Haehl and Hyde Forbes in 1926 in a private report for the Boston Land Co. presented about 1,600 water-level measurements in western Fresno and Kings Counties, including periodic measurements made in 70 observation wells.

From 1933 onward the San Joaquin Power Division of the Pacific Gas and Electric Co. has measured water levels in wells being pumped and "recovery" levels after a 5- to 15-minute shutdown of the pump, in connection with pump-efficiency tests which have been run annually and in many cases semiannually for nearly all the irrigation wells in the area. The results of about 8,000 of these tests have been made available for general interpretive purposes through the cooperation of the company and the many land owners or lessees concerned.

Since 1939 the Bureau of Reclamation has made periodic water-level measurements in selected wells in the area, although prior to 1949 only wells north of the southern boundary of T. 16 S. were measured periodically. Most of these wells are measured quarterly, although 41 wells were measured each month in 1951. Approximately 3,500 measurements were available from the Bureau of Reclamation.

In the well canvass by the Geological Survey, measurements of depth to water were made in 711 wells in the Mendota-Huron area. Approximately 138 wells have been measured quarterly since August 1950, and 48 wells were measured each month from November 1951 to November 1952. In the spring of 1951 (April and May) all available wells that had been measured in the original canvass were remeasured to provide basic data for a spring water-level contour map. This well-measurement program was repeated in May 1952 and May 1953, at which times approximately 500 wells selected to give optimum coverage for construction of water-level maps were remeasured. Automatic water-level recorders are being operated on 6 unused wells. In the selection of wells for both monthly observations and recorders an effort has been made to pair wells that tap the lower water-bearing zone with wells that reflect conditions in the upper water-bearing zone.

DRILLERS' LOGS AND ELECTRIC LOGS

In December 1952, 430 drillers' logs and 220 electric logs of water wells in the area had been collected from owners, well drillers, and State and Federal agencies. These records are essential in determining the character, extent, and thickness of water-bearing and non-water-bearing materials of the area. Electric logs are the graphic records of continuous measurements made in wells prior to casing and indicate the electrical resistivity of earth formations; and the phenomenon of spontaneous electrical potential. These logs, interpreted in the light of other data, give a relatively accurate picture of the depth, thickness, and general physical character of strata penetrated by the drill. They also are of value in estimating permeability of the sediments penetrated and are an aid in determining the chemical character of the formation water.

Drillers' logs are the well drillers' record of materials found in drilling. In rotary drilling the log is kept by observing the action of the drill and by sampling formation cuttings from the mud stream. The quality of the records varies considerably with the skill and attitude of the driller. Some logs on comparison with electric logs from nearby wells appear to be a reasonably accurate and detailed description of the sediments, while others are of little value beyond giving the total depth and information on completion details of the well. Beds penetrated in drilling water wells in the Mendota-Huron area are generally fine grained, ranging in grain size from clay to coarse sand. Almost no gravel is revealed by the drill. In passing through fine-grained deposits with the rotary drill, it is difficult for a driller to distinguish minor changes in the physical character of the sediments. This is probably the principal reason for the poor record on many drillers' logs in this area. Partly for this reason it has become

customary for many of the land operators to obtain electric logs of the deposits penetrated. The drillers have come to rely more and more on the electric log and to pay less attention to obtaining a good lithologic log. Much worthwhile geologic information on color, sorting, and grain size of the sediments can be obtained from an accurate driller's log that is not readily available from an electric log. Thus, drillers' logs supplement electric-log data in parts of the area where few electric logs are available and serve as a guide in the geologic interpretation of electric logs. In conjunction with water-level measurements and chemical analyses the two kinds of logs provide a means for determining the number and extent of aquifers (water-bearing beds).

CHEMICAL ANALYSES

In order to define the zones of water of inferior quality that may affect recharge problems, the Geological Survey has assembled as much chemical data for the area as possible. About 1,500 analyses of well waters are on file, of which about two-thirds include determination of the principal cations and anions present: calcium, magnesium, sodium, bicarbonate, sulfate, and chloride. The partial analyses usually include determinations of the principal anions—bicarbonate, sulfate, and chloride, but in some cases only chloride and sodium. As the boron content of the ground water in many west-side wells is high enough to be significant, many analyses for boron only are available.

In August and September 1951 the Geological Survey, in cooperation with the Water Quality Section of the California Division of Water Resources, sampled water from 803 wells in the Mendota-Huron area that were being pumped when visited. Of these wells 45 were sampled for complete analysis and 758 for partial analysis. Analyses were made chiefly in the laboratory of the Quality of Water Branch of the Geological Survey as part of the cooperative program with the Division of Water Resources. Results of the analyses together with information on the wells sampled are included on pages 467–585.

METHODS OF WELL CONSTRUCTION

The type of well construction used in the Mendota-Huron area has a profound effect upon chemical quality of the ground water yielded and upon water levels in wells. In general, wells in the area may be grouped as: cable-tool wells; rotary wells with gravel pack; rotary wells without gravel pack; and rotary wells that have seals to exclude waters from specific zones.

In cable-tool drilling the hole is excavated by the repeated raising and dropping of a bit or bailer. When a bit is used, as in hard,

compact strata, it is necessary to withdraw the tools periodically to remove cuttings with a bailer. In soft materials a bailer with a cutting edge may be used both to cut and to entrap the material drilled. In either method casing of slightly larger diameter than the cutting tool is driven into the hole as drilling proceeds. Thus, the casing forms an effective seal against movement of water between zones of different hydraulic head. After the well is drilled to the desired depth, the casing may be left unperforated with an open bottom, but for an irrigation well where maximum water production is desired the casing is perforated in place by a knife tool opposite water-bearing material.

Only a few irrigation wells in the Mendota-Huron area have been drilled with cable tools and most of these were drilled prior to 1935; however, many of the stock and industrial wells located in the well canvass were drilled by this method. These wells are especially valuable in quality-of-water studies because the waters usually are derived from a relatively thin zone and are not apt to be contaminated by interchange of water between zones of varying head.

In rotary drilling the cutting action is accomplished by rotating a bit on the end of a string of hollow pipe. The cuttings are removed by thin mud pumped down the drill pipe, out through openings in the bit, and up the annular space between the drill pipe and the hole wall. The mud not only removes the cuttings but also forms a coating on the wall of the hole that prevents loose materials from caving. The casing is lowered into the borehole only after the hole is drilled to its total depth.

Rotary wells may be completed with or without a gravel pack. When irrigation wells were first drilled in western Fresno County it was customary to drill a hole only slightly larger than the casing to be used, so that upon completion the well differed very little from a cable-tool well. In an effort to increase well capacities the gravel-packed well was introduced. In this method a small-diameter pilot hole is drilled first, then the full depth of hole is reamed out to 24- to 30-inch diameter. Factory-perforated casing is lowered into the hole and the annular space between the casing and wall of the hole is filled with gravel as the mud is flushed from the hole with clean water. Thus, the casing is enclosed by an envelope of gravel as much as 7 inches thick which increases the effective radius of the well and screens out fine-grained material at the same time. All water-bearing strata, regardless of thickness, contribute to the well supply in a properly constructed gravel-packed well.

Most of the irrigation wells in the Mendota-Huron area are gravel packed. The typical well extends to a depth of 1,000 to 2,000 feet. The hole is usually 10 to 14 inches greater in diameter than the casing to be put in the well. The casing generally used at present is seamless

steel pipe, 10 to 20 inches in diameter with ¼- or 5/16-inch wall, and is butt welded in sections as it is lowered into the hole. Ordinarily the upper portion of the hole is cased with 16- to 20-inch casing to receive the pump column and bowls. At a depth 100 to 200 feet below the water level the casing diameter is reduced to 10 to 12 inches. In many wells a second reduction in diameter is made. These lower sections of smaller diameter are used to produce high flow velocities in the lower portion of the well so as to prevent settling of sand, and also to reduce cost of casing the well. The casing may be landed on the bottom or suspended a few feet off the bottom of the hole. After the casing is inserted the space between the casing and the wall of the hole is filled with fine gravel, usually one-quarter inch or larger. The well is then flushed of drilling mud and developed by pumping with a variable-speed motor. As a general rule perforations extend from the first reduction in casing diameter, the bottom of the so-called "pit," to the bottom of the hole. The upper large-diameter casing is left unperforated to eliminate "falling water" which entraps air and lowers pump efficiency.

PHYSICAL CHARACTER AND THICKNESS OF THE WATER-BEARING DEPOSITS

The cooperative investigation in the Mendota-Huron area is fundamentally concerned with the water-bearing character of the deposits, and particularly with their ability to transmit water both laterally and vertically. The geologic features have been studied by use of drillers' logs, electric logs, and core descriptions. The many electric logs and a few core descriptions afford most of the basis for identification and correlation of beds and have furnished important aid in outlining the depth and extent of zones containing water of inferior quality.

With respect to the occurrence and movement of ground water the rocks of the area may be divided into two general types: unconsolidated continental deposits and semiconsolidated to consolidated, predominantly brackish-water and marine sediments. The brackish-water and marine sediments are of late Pliocene age and older and, except as a source of local salt-water contamination, do not supply significant quantities of water to wells.

The unconsolidated continental deposits comprise the younger alluvium, older alluvium, and the Tulare formation as defined by Woodring (Woodring, Stewart, and Richards, 1940) at the Kettleman Hills. The continental deposits consist largely of lenticular tongues or beds of sand, silt, and clay that differ widely in extent and thickness and grade abruptly both laterally and vertically into one another.

Only one persistent stratum, a diatomaceous clay or silty clay of

apparent lake-bed origin, can be traced through most of the area. Within the extent of this stratum a generalized threefold subdivision of the continental deposits can be made as follows: An upper unit extending from the land surface to the top of the diatomaceous clay at a depth ranging from 400 to 800 feet below the land surface and including the younger and older alluvium and part of the Tulare formation; an impervious diatomaceous clay within the Tulare formation ranging in thickness from 20 to 120 feet, which not only serves as a geologic marker but also separates waters of substantially different chemical quality; and a lower unit, 600 to 1,500 feet thick, that probably includes the lowest part of the Tulare formation and possibly the uppermost part of the San Joaquin formation, and that extends down to the first beds containing salty water, probably connate water or dilute connate water of marine origin.

At present the base of the lower unit is determined by a change in water quality rather than a stratigraphic boundary, but until detailed subsurface geologic studies are made the change in water quality is the only significant change in the section upon which a subdivision may be based. Moreover, the occurrence of saline water is presumed to be related to the depositional environment and may represent a stratigraphic horizon, although the possibility of upward or lateral migration of marine connate waters should not be overlooked.

Plates 30, 31, and 32 are geologic sections across the Mendota-Huron area, showing the geology of the continental deposits penetrated in water wells, as indicated by electric logs. As noted earlier, most of the drillers' logs are not sufficiently reliable to plot, and thus lithologic logs have not been plotted on the sections. Locations of these sections are shown on plates 28 and 29.

UPPER UNIT

The alluvial deposits of the upper unit consist of highly lenticular poorly sorted clay, silt, and sand intercalated with occasional beds of well-sorted fine- to medium-grained sand. The average sand content of deposits in the upper unit, as computed from electric logs and core descriptions of wells used on the geologic sections (pls. 30, 31, and 32), ranges from 11 percent for geologic section *F-G* (pl. 31) to 18 percent for geologic section *A-B-C* (pl. 30). This estimate of sand content was made by interpreting available electric logs along the line of profile according to methods described by the Schlumberger Corp. (Schlumberger Well Surveying Corp., 1949). Briefly, these interpretations were based upon the assumption that in the unconsolidated materials containing fresh or relatively fresh water in the Mendota-Huron area high resistivity indicates sand containing fresh water and low resistivity indicates clay or silty clay. Intermediate resistivity

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values indicate silt, silty sand, and other materials intermediate between sand and clay. Increasing resistivity is indicated on the right-hand curve of the electric log (pl. 30) by a swing to the right and decreasing resistivity by a swing to the left. Thus, the diatomaceous blue clay is represented by a straight-line segment of uniformly low resistivity.

As shown on the geologic sections (pls. 30, 31, and 32), the thickness of the upper unit ranges from about 400 to 800 feet, depending upon the depth to the top of the diatomaceous clay marker. The thickness is greatest, 700 to 800 feet, 4 to 8 miles from the western margin of the alluvium and decreases eastward to the valley trough where it is 400 to 600 feet. The deposits at the base of the upper unit appear to rest conformably upon the underlying diatomaceous clay bed.

The only significant subdivision of the deposits of the upper unit is based upon the difference between sediments from an eastern source and those derived from the west. The deposits penetrated near the land surface consist of oxidized, yellow to brownish-gray sediments grading downward to unoxidized, grayish sediments composed of reworked Tertiary and late Mesozoic sediments of marine origin that crop out in the Coast Ranges to the west. These deposits are generally calcareous, containing from 1 to 6 percent calcium carbonate by weight. In addition, gypsum (hydrous calcium sulfate) is a common constituent, occurring in many places in concentrations of 2 to 7 percent by weight. It is of interest to note that in test well 15/14–15E1, drilled by the Bureau of Reclamation 11 miles west of Tranquillity, calcium carbonate was present in appreciable amounts in all samples ascribed to a western source, extending to a depth of 535 feet, but calcium sulfate was only noted occasionally and was more or less confined to the uppermost 200 feet of the section (unpublished data from Bureau of Reclamation, 1951).

Grayish sand and silt containing abundant micaceous granitic fragments and in some places glassy volcanic detritus, all presumably derived from the Sierra Nevada, have been reported from core holes drilled near Westhaven.[1] Because no sediments from an eastern source have been recognized at the outcrop of the Tulare formation and younger deposits in the foothills west of the valley, it is presumed that such materials pinch out beneath the Mendota-Huron area. In contrast to the deposits derived from the Coast Ranges, those derived from the Sierra Nevada are not reported to contain gypsum and their calcium carbonate content is low, generally less than 0.5 percent by weight. Because the diatomaceous clay underlying this upper unit is of late Pliocene age as described by Lohman, the upper unit constitutes the entire thickness of deposits of Quaternary age in

[1] Shell Oil Co., 1929, unpublished report, Results of core drilling on the Boston Land Co.

the Mendota-Huron area and may include near its base some deposits of latest Pliocene age. Thus, it includes the deposits of Pleistocene and Recent age which therefore are known not to exceed 400 to 800 feet in thickness.

DIATOMACEOUS CLAY

A bed of well-sorted diatomaceous greenish to bluish silty clay, commonly referred to as "the blue clay," underlies the upper unit in the Mendota-Huron area along the western margin of the valley. This distinctive stratum is easily recognized in electric logs and is mentioned in some drillers' logs. It ranges from 20 to 120 feet in thickness and apparently is laterally continuous throughout the axial part of the valley included within the Mendota-Huron area. On geologic section *A–B–C* (pl. 30) the clay can be traced to the valley border and beneath the foothills on the west. As shown on geologic sections *F–G* and *J–K* (pls. 31 and 32) it thins westward, and on section *J–K* it cannot be identified in electric logs west of T. 20 S., R. 18 E., possibly because of a westward gradation into silt or clayey silt. The broad lateral distribution of this stratum, its uniform fine-grained texture as indicated by electric logs and cores, its position between coarser deposits of definite continental origin, and the presence of fossil remains of diatoms, microscopic plants found in fresh-water lakes as well as in marine deposits, all point to an extensive fresh-water lake as the depositional environment of the diatomaceous clay. Lohman in 1954 identified 113 species and varieties of diatoms from samples of the diatomaceous clay cored in test wells of the Bureau of Reclamation. His description of the environment in which the clay bed was deposited is as follows:

> This assemblage of 113 species and varieties of diatoms represents deposition under dominantly fresh-water conditions, although the occurrence of some species that now live in both fresh- and brackish-water environments suggests that the lake water may have been locally brackish.

The diatomaceous clay is correlated with part of the Tulare formation of late Pliocene and Pleistocene age by Lohman on the basis of the diatom assemblage. Of the 113 species and varieties of diatoms identified from the clay, 37 species and varieties also occur in a 12-foot bed of diatomaceous clay at the base of the Tulare formation in the Kettleman Hills. The lower part of the Tulare formation is considered to be of late Pliocene age by Woodring (Woodring, Stewart, and Richards, 1940, p. 13–26, 103–104) on the basis of molluscan evidence. Moreover, 5 species of diatoms known previously only from Pliocene collections were recognized by Lohman in the diatomaceous clay, suggesting that the clay may be of late Pliocene age.

The geologic structure as reflected by the clay bed is relatively

simple, being characterized by a gentle southwesterly dip from the present topographic axis of the valley toward the foothills of the Coast Range. Southwest of Mendota (section *A–B–C*) and along the Fresno-Coalinga road (section *F–G*) the shape of the clay bed is gently synclinal, and the axis along these two sections is 13 and 12 miles, respectively, southwest of the present topographic axis of the valley. The dip of the clay bed ranges from essentially horizontal to as much as 100 feet per mile.

The position of the diatomaceous clay as shown on the geologic sections suggests that postdepositional structural movements may have mildly deformed this stratum; however, it must be borne in mind that the clay probably was deposited on the floor of a freshwater lake which must have had considerable slope, possibly even comparable with the gradients of the present valley floor. Hence, some of the dip noted in the clay bed may be initial dip of the deposits. Much subsurface geologic work remains to be done before this problem can be adequately resolved.

Minor changes in slope appearing on the geologic sections are not considered significant. The true direction of dip of the clay bed is unknown and section alinements were chosen approximately normal to the regional strike of the Coast Ranges. It was necessary to project the position of the wells into the line of section in most cases, in some places from a considerable distance. Well positions are projected normal to the line of section, and if the strike of the clay bed differs appreciably from the direction of projection the clay bed would appear in the wrong vertical position; this may, in part, explain the apparent minor changes in dip.

Geologic section *A–B–C*, extending southwesterly from Mendota to the canyon of Panoche Creek, shows the diatomaceous clay in its most typical form. Many electric logs are available and the clay stratum can be traced to the western margin of the valley. Between well 13/15–35E1 and well 14/14–12N2 the clay bed slopes approximately 3 feet per mile westward. Between well 14/14–12N2 and well 15/13–11D1 the slope increases to 15 feet per mile. Beyond well 15/13–11D1 the slope reverses, the clay sloping upward 435 feet to well 15/13–18N1 (average slope about 100 feet per mile). Test well 15/12–23Q1 in the foothills of the Coast Ranges, about a mile west of the valley border, revealed a diatomaceous silt bed at an altitude of 485 feet above sea level that is correlative with the diatomaceous clay found in wells in the valley.

On geologic section *F–G*, which follows the Fresno-Coalinga road, the clay bed slopes about 4 feet per mile southwestward between wells 17/17–26E1 and 17/17–29P1. Between well 17/17–29P1 and well 18/17–7L1 the apparent dip increases to 52 feet per mile south-

westward. Beyond well 18/17–7L1 the diatomaceous clay reverses slope upward 37 feet per mile to well 18/16–25K. This reversal of dip is in line with the trend of an anticlinal structure described by Atwill (1943) and may reflect postdepositional deformation of the clay.

On geologic section *J–K*, through Huron, the diatomaceous clay bed slopes westerly about 15 feet per mile between wells 19/19–4G1 and 19/18–33N2. West of well 33N2 the clay bed is not recognized in electric logs, possibly because of a gradation into silt or sand.

LOWER UNIT

The lower unit of the continental deposits underlies the diatomaceous clay and extends downward to depths of 1,000 to 3,000 feet below land surface; it comprises lenticular beds of silty clay, clay, silt, and sand interbedded with occasional strata of well-sorted sand. This lower unit is defined tentatively as extending downward to the first occurrence of saline water. In the northern part of the area, near Mendota, saline waters have been tapped by many wells from 1,000 to 1,400 feet below land surface. However, in most of the Mendota-Huron area wells 2,000 feet and in some places as much as 3,000 feet deep do not tap saline water. Much subsurface geologic work remains to be done in order to properly define the base of the lower unit.

Interpretation of electric logs shown on the geologic sections indicates that the sand members in the sediments in the lower unit make up an average of 17 percent of the total thickness along section *A–B–C*, 15 percent along section *F–G*, and 13 percent along section *J–K*. These variations are not considered significant, however, inasmuch as the differences between the profile averages are smaller than the differences between percentages for individual wells on the profiles.

As in the upper unit, sediments from both eastern and western sources are present in the lower unit. In the Westhaven area, Holdredge (footnote 1, p. 422) reported highly oxidized brown sand, silt, and clay beneath the diatomaceous clay. According to Holdredge these presumed western-source deposits thin from 1,000 to 100 feet northeastward in a distance of about 6½ miles. Underlying these deposits and extending downward to the first occurrence of marine fossils at about 3,000 feet depth are unoxidized light-gray angular poorly sorted micaceous granitic sand and dark-colored silt and silty clay inferred to be from an eastern source. In the sand beds from the eastern source, fossils of fresh-water mollusks are common and fish remains are prevalent in the clay beds toward the base of the zone, indicating lacustrine conditions; whereas the oxidized clay and silt

strata from the western source appear to have been deposited under subareal conditions similar to those in the area at present.

The abundance of granitic sand containing small fragments of fossil shells discharged at land surface from deep wells in much of the Mendota-Huron area testifies to the widespread extent in the lower unit of lacustrine beds from an eastern source, similar to those described above at depth, but no geologic studies of these deposits other than those of Holdredge have been undertaken to date, except for current extensive but uncompleted studies by the Bureau of Reclamation. If the overlying diatomaceous clay is of late Pliocene age as designated by Lohman, the lower unit is of Pliocene age and comprises the basal part of the Tulare formation and possibly the uppermost part of the San Joaquin formation.

GROUND-WATER FEATURES

OCCURRENCE OF GROUND WATER

In general, at least three distinct ground-water bodies are penetrated in drilling wells in the Mendota-Huron area. In downward succession these are: a body of semiconfined water which occupies all but the uppermost part of the upper unit of the continental deposits—called the upper water-bearing zone for purposes of this report; the principal body of water of poor to good chemical quality which occupies the lower unit of the continental deposits and is confined by the diatomaceous clay—called the lower water-bearing zone in this report; and a body or bodies of brackish to saline water which underlie the fresh-water body throughout the area.

UPPER WATER-BEARING ZONE

Water contained in the alluvial deposits of the upper water-bearing zone is partly confined, and except in a limited area near the western margin of the valley it appears to be effectively separated from water in the deposits of the lower water-bearing zone by the diatomaceous clay. The aquifers of the upper zone are believed to consist of lenticular fluviatile sand lenses, more or less interconnected hydraulically both horizontally and vertically. The water in wells of different depths in the same locality stands at different levels, but always higher than in wells perforated only in the lower zone. In many wells tapping both the upper and lower water-bearing zones water stands at a level intermediate between the water levels characteristic of the two zones. Chemical analyses of water from deep wells indicate that many draw appreciable quantities of water from the upper zone, either directly through perforations or leaks opposite the upper zone, or by recovery from the lower zone after downward movement of the upper-zone water in the well casing or in the gravel pack, or both.

The following diagrammatic sketch (fig. 67) illustrates the general pattern of water movement from the upper to the lower water-bearing zone when the pump is not operating.

Laboratory tests made by the Bureau of Reclamation upon cores from test well 15/14–15E1 indicate that locally the porosity of the deposits of the upper zone ranges from 36 percent for an ill-sorted silt to 54 percent for a clay. Permeameter tests made normal to the bedding on selected cores from that well indicated a range in permeability (Wenzel, 1942) from 0.0009 gpd per square foot in clay to a maximum of 74 gpd per square foot in a well-sorted fine sand.

In much of the Mendota-Huron area the low permeability of the upper water-bearing zone has led to the practice of drilling irrigation wells to include the lower water-bearing zone as the principal aquifer; in some places the inferior quality of water in the upper zone precludes its use for irrigation, but in a belt paralleling the axial trough of the

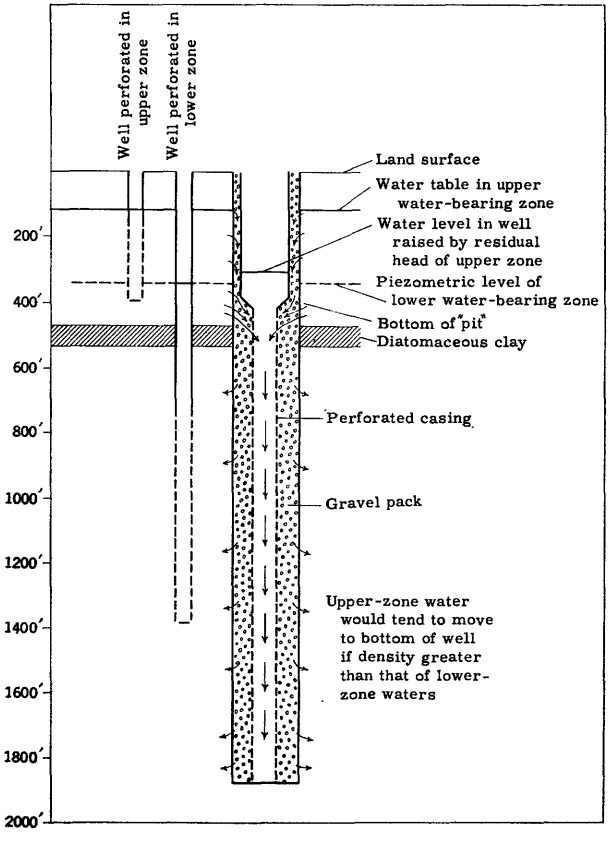

FIGURE 67.—Diagrammatic sketch of well showing general path of water circulation from upper to lower zone when pump is not operating.

valley from Tranquillity southeast about 25 miles to Oakland Avenue and extending 3 to 5 miles westward, wells completed in the upper zone provide ample supplies of irrigation water of usable quality. Pump-efficiency tests on 35 wells tapping the upper zone in this area indicate an average yield per well of 1,330 gpm and an average specific capacity of 62 gpm per foot of drawdown. Yield ranges from 557 to 2,057 gpm and specific capacity from 20 to 128 gpm per foot of drawdown.

LOWER WATER-BEARING ZONE

Water in the lower water-bearing zone is effectively confined by the diatomaceous clay, except along the western edge of the valley. It is confined most extensively south of the Fresno-Coalinga road. In the Mendota-Huron area the piezometric (pressure) surface for confined water in the lower zone, an imaginary surface that coincides everywhere with the head of the water in the confined aquifer, was materially lower in 1952 than water levels in wells tapping only the upper water-bearing zone. The difference in head is easily recognized by comparison of levels in companion deep and shallow wells. It ranges from 30 feet or less near the city of San Joaquin in the axial trough of the valley, where draft on the lower zone is negligible, to more than 300 feet west of Five Points, where almost all the pumpage is from the lower zone.

Deposits of the lower zone support the bulk of the irrigation draft in the Mendota-Huron area, which approximated 1,240,000 acre-feet in 1952–53 (table 1). Records of pump-efficiency tests obtained from the Pacific Gas and Electric Co. through the cooperation of well owners indicate that the average irrigation-well yield is about 1,100 gpm and the average specific capacity is 42 gpm per foot of drawdown, based on records of 425 wells for which complete information was available in 1952. Many of these wells tap part of the upper water-bearing zone as well as the lower zone, and possibily as many as 10 percent tap the upper zone only. Therefore the averages cited above are for the average well yield in the Mendota-Huron area, regardless of zone tapped.

Pump-efficiency tests for 62 wells that tap the lower water-bearing zone exclusively, or include not more than 50 feet of the upper zone in their perforated casing interval, indicate an average yield of 1,280 gpm, an average drawdown of 31 feet, and an average specific capacity of 48.

It is difficult to determine the transmissibility of the lower water-bearing zone because of the pumping schedules. Crops are grown throughout the year and fields are irrigated both day and night. On the average, one well per square mile operated continuously about 85

percent of the year in 1952, according to estimates of the Pacific Gas and Electric Co. Under such a system many of the thousand irrigation wells in the area are operating at any given time and a complete pumping shutdown is literally unknown. Thus, the standard tests for determining transmissibility by measuring the drawdown in nearby idle wells when a well is pumped would be exceedingly difficult to run and evaluate because of interference from many distant wells. Fortunately, information available from a study by Haehl and Forbes (p. 416) for the Boston Land Co. in the Westhaven area can be interpreted in the light of modern hydrologic theory to obtain figures for the transmissibility and permeability of the deposits in the lower zone.

In 1926 the Boston Land Co. had 54 irrigation wells near Westhaven in T. 19 S., R. 18 E. and the northern part of T. 20 S., R. 18 E. These wells were 1,335 to 2,600 feet deep and were perforated at depths from 600 to 2,600 feet. The wells were drilled by the rotary method, but were completed without gravel packs. Thus, it can be assumed that the wells drew no water from above the shallowest perforations. Inasmuch as the base of the upper water-bearing zone is 650 to 800 feet below land surface near Westhaven (pl. 32), only a small percentage of the perforated interval is opposite the upper zone. It is believed that little error is introduced by assuming that the wells of the Boston Land Co. drew all their water from the lower water-bearing zone.

As part of the 1926 study, all 54 wells of the Boston Land Co. were shut down for a period of 3 months, July 31 to November 1, 1926. During the shutdown period continuous observations were made of water-level recovery in the wells of the Boston Land Co. and in other selected deep wells in the vicinity. The coefficient of transmissibility for the deposits of the lower zone as estimated from the curve of average recovery of Boston Land Co. wells by the Theis recovery formula (Theis, 1935, p. 522) is 120,000 gpd per foot. Assuming an average perforated thickness of 1,100 feet, the average coefficient of permeability of the lower water-bearing zone is computed to be 110 gpd per square foot.

An anomalous condition exists in the area west of Huron, extending roughly 6 miles east and north of the mouth of Los Gatos Creek, sec. 22, T. 20 S., R. 16 E. (See pls. 28 and 29.) In this area wells to depths of 2,000 to 2,200 feet are characterized by abnormally shallow static water levels, low discharge temperatures, and high sulfate concentrations, generally associated with waters contained in deposits of the upper water-bearing zone. The cause is not fully known but it seems to be related to the fact that the diatomaceous clay confining bed is lacking in this area as indicated by geologic section *J–K* (pl. 32). The low water temperatures and high sulfate content of these waters, characteristic of the ground and surface waters of Pleasant Valley,

suggest that recharge from Los Gatos Creek is reaching the deposits tapped by these deep wells.

GROUND-WATER PUMPAGE

The pumping draft in the Mendota-Huron area, which has increased so rapidly since 1945, has had an important effect on ground-water conditions, with respect to direction of movement, position of the water table in the upper water-bearing zone, and especially the position of the piezometric surface for the lower water-bearing zone.

At the time of the original Geological Survey well canvass in the San Joaquin Valley in 1905 essentially no irrigation was reported in the Mendota-Huron area. One artesian well in sec. 14, T. 16 S., R. 17 E., was reported as used for irrigation exclusively and several wells at oil pipeline pumping stations were used to irrigate small gardens and for domestic supply. In 1909 Stabler (Mendenhall, Dole, and Stabler, 1910, p. 154) tested the performance of an irrigation pumping plant owned by the Valle Verde Investment Co. in sec. 2, T. 14 S., R. 14 E., that was used to irrigate 58 acres of grain, alfalfa, and garden truck. In the text of Water-Supply Paper 398 (p. 238), Mendenhall describes conditions in 1910 as follows:

> The west side of the county is mostly semiarid sheep range, but the possibility of producing good crops by the use of ground water along the lower eastern edge of this west-side plain is being demonstrated around Mendota and Huron, and on several isolated farms between these settlements. Barley, Egyptian corn, alfalfa, and general garden truck are being irrigated by pumping in T. 14 S., R. 14 E., T. 15 S., R. 14 E., T. 15 S., R. 15 E., and T. 20 S., R. 17 E.

The first large-scale irrigation development in the Mendota-Huron area was undertaken near Oro Loma (pl. 28) in T. 12 S., R. 11 E. and T. 12 S., R. 12 E. as early as 1915. An attempt was made in that year to colonize a large area by subdividing the land into 20-acre to 80-acre tracts. Storage works were built on Little Panoche Creek for a surface-water supply which was to be supplemented by ground-water pumpage from 12 wells, each about 600 feet deep, drilled by the colony. The surface supply proved inadequate and the storage and diversion works were destroyed by floods. The project was soon abandoned as the operation of the small tracts proved uneconomical. The land was purchased by companies and individuals who now farm it in large tracts.

The Boston Land Co. in 1917 began large-scale irrigation in the southern part of the area with the drilling of 30 wells, 1,400 to 2,000 feet deep, to supply irrigation water to a tract of 37,000 acres near Westhaven. Between 1917 and 1924 an additional 24 deep wells were drilled on the property. From 1917 to 1926 an average of 12,500 acre-feet of water was pumped annually (see p. 416, Haehl and Forbes,

unpublished report). Early attempts to grow orchards and vineyards proved unsuccessful, presumably because of the inferior quality of the ground-water supply in relation to soils and drainage, and the area is now devoted principally to growing cotton and grain.

A summary of pump-efficiency tests made by the San Joaquin Light and Power Corp. in 1923 and 1924 indicates that there were at least 31 irrigation wells in the Mendota-Huron area in addition to the 54 wells of the Boston Land Co. On the basis of electric energy consumed and average energy required for each acre-foot of water pumped, the San Joaquin Light and Power Corp. has estimated that these 31 wells pumped 22,000 acre-feet annually; the average capacity of the pumps was 850 gpm. Thus, in 1924, the pumping draft from the Mendota-Huron area was about 35,000 acre-feet.

In 1926, Forbes (p. 416) canvassed the area south of the south line of T. 16 S. and reported 78 active irrigation wells in that part of the Mendota-Huron area.

A summary of pump-efficiency tests made by the San Joaquin Light and Power Corp. for the Firebaugh-Mendota territory in 1929 lists 74 irrigation wells in T. 13 S., T. 14 S., and T. 15 S., all within the borders of the Mendota-Huron area. Pumpage from these wells was estimated by the San Joaquin Light and Power Corp. from electric energy consumed to have been 74,000 acre-feet in 1929, or an average of 1,000 acre-feet per well.

A map compiled by E. J. Griffith, Pacific Gas and Electric Co., in December 1941, showed the locations of 293 irrigation wells in the Mendota-Huron area. In the 10-year period 1941 to 1951 this number had more than tripled, to a total of 1,022 irrigation wells by the autumn of 1951.

Table 1 and figure 68 show the total ground-water withdrawals for the period 1935–36 to 1952–53, inclusive. The basic data were compiled largely by E. J. Griffith, power engineer, Pacific Gas and Electric Co., Fresno, and were made available through the cooperation of V. C. Redman, division sales manager, San Joaquin Power Division, Pacific Gas and Electric Co. The total ground-water withdrawals in acre-feet were derived from total power consumption per customer per year divided by an average figure for kilowatt hours per acre-foot for each customer as determined from pump-efficiency tests for that customer for the same year. The pumpage total has been separated into the part for a northern district, that part of the Mendota-Huron area north of the north line of T. 16 S., and the part for a southern district including T. 16 S., and extending southward to Tulare Lake Bed, in order to bring out the extraordinary increase in amount of water pumped in the southern district since 1945.

As shown by the table and by figure 68, pumpage in the northern district has almost trebled from 1935–36 to 1952–53—from 115 to 340 thousand acre-feet. In the southern district, however, pumpage has increased from 20 to 895 thousand acre-feet in the 17 years since 1935–36. Pumpage in the southern district has more than doubled since 1948–49. Pumpage in the two districts was about equal from 1939–40 to 1945–46, but in the following 7 years to 1952–53 in the southern district increased to nearly three times that in the northern district.

TABLE 1.—*Estimated ground-water pumpage in the Mendota-Huron area, 1935–53*

[Pumpage in thousands of acre-feet; for agricultural year beginning April 1 and ending March 31; data chiefly from Pacific Gas and Electric Co.]

Year	Northern district	Southern district	Total	Year	Northern district	Southern district	Total
1935–36	115	20	135	1944–45	175	175	350
1936–37	130	30	160	1945–46	180	190	370
1937–38	140	75	215	1946–47	200	255	455
1938–39	150	110	260	1947–48	240	355	595
				1948–49	235	410	645
1939–40	145	130	275				
1940–41	140	130	270	1949–50	255	590	845
1941–42	135	145	280	1950–51	305	695	1,000
1942–43	150	170	320	1951–52	245	805	1,050
1943–44	165	175	340	1952–53	340	895	1,240

Nearly all the water pumped directly from the upper water-bearing zone is through irrigation wells, although a few wells, used for stock, domestic, and industrial supply, draw water from the upper zone. In the area from Tranquillity southeast to Five Points and for about 8 miles beyond, most of the irrigation draft is from wells tapping only the upper zone. Elsewhere in the Mendota-Huron area, draft from the upper zone is chiefly from deeper wells that produce also from the lower water-bearing zone.

Most of the water now pumped from the Mendota-Huron area is withdrawn from the lower water-bearing zone. An accurate estimate of the proportion taken from each zone cannot be made with available data because so many of the wells tap both zones, and water moves from the upper to the lower zone in substantial quantity through well casings and gravel envelopes when the pumps in the two-zone wells are idle. (See fig. 67.) However, a review of the proportion of perforated casing in the lower zone to that in the upper zone suggests that at least 75 percent and possibly more than 80 percent of the overall pumpage is from the lower water-bearing zone. The very large withdrawal from this zone has drawn down water levels so substantially that in 1951 the pumping lift ranged from 100 feet below land surface in the eastern part of the area near Tranquillity to more than 700 feet in the western part near the mouth of Cantua Creek; the average lift was on the order of 400 feet. (See pl. 33.)

MOVEMENT OF GROUND WATER

Earliest measurements of depth to water in wells in the Mendota-Huron area, made by the Geological Survey in 1905 (Mendenhall, Dole, and Stabler, 1916, pl. 1 and tables 52 and 58), indicate that at that time, prior to the introduction of irrigated agriculture in the area, the water-level gradient in the deposits of the upper water-bearing zone sloped gently from the foothills of the Coast Ranges on the west toward the axial trough of the valley on the east. Lines of equal elevation of the water surface for 1905 (shown in Water-Supply Paper 398, pl. 1) based upon water-level measurements in shallow stock and domestic wells less than 300 feet deep, indicate a northeasterly water-level gradient of 7 feet per mile or less throughout the Mendota-Huron area.

Forbes (p. 416) states that in 1926 the average gradient of the shallow water body was about 6 feet per mile from Huron eastward to the axial trough. Waters of surface streams emerging from the Coast Ranges on the west evidently percolated downward to the upper water-bearing zone and moved eastward down the slope of the water table to escape by evaporation at land surface within a belt of alkali soils on the lower slopes of the west-side alluvial fans (Harradine, 1950, p. 17). Strong supporting evidence is furnished by the fact that the west-side streams do not have well-defined channels across the area and even in flood stage rarely reach the Kings and San Joaquin River drainages along the axial trough of the valley.

Irrigation draft and replenishment have somewhat altered the form of the water surface in the upper zone. In areas where draft on the upper zone has been heavy, as in the axial portion of the valley, water levels have declined markedly below initial conditions, yet in other areas where the irrigation draft is confined almost wholly to the lower water-bearing zone, water levels in the upper zone appear to have risen slightly. Water in the upper zone is in part confined and in part unconfined—that is, a free water table exists at the top of the saturated sediments, but there is sufficient separation of aquifers within the upper zone that water stands at different levels in wells of different depth. The existence of such differences in head within the upper zone is illustrated near the eastern end of water-level profile *F–G–H* (pl. 34). Static levels measured in wells that tap the lower part of the upper zone are 10 to 115 feet deeper than the water table, and heavy irrigation draft near Five Points has caused a westward water-level gradient of 18 feet per mile between wells 17/18–9E1 and 17/17–27R1, in the opposite direction from the slope of the water table. The approximate position of the water table in 1951 is shown on plates 30–32, and 34. Measurements of water levels in the spring of 1951 did not supply sufficient control to draw contours or profiles of the

water table, so the 1951 measurements were supplemented in part of the area by measurements made in earlier years (1948–50), and by determination of the top of the saturated sediments from electric logs. Although the water table so defined is too poorly controlled to permit accurate estimates of changes in ground-water storage, it is probably correct to within a few feet and shows the direction of movement of the unconfined water.

The initial gradient of the piezometric or pressure surface of the confined water in the lower water-bearing zone cannot be established accurately from available records. Mendenhall (Mendenhall, Dole, and Stabler, 1916, pl. 1) outlined the area in the San Joaquin Valley where artesian wells flowed at the land surface in 1905. This belt extended northward from Kern County to the San Joaquin River delta and several miles east and west of the valley trough. This artesian area extended 2 to 6 miles westward from the valley axis throughout the length of the Mendota-Huron area but the western boundary was poorly defined. Within the area of flowing wells the piezometric surface of the confined water necessarily stood above land surface and the boundary of the area of flowing wells represented the line where the piezometric surface intersected the land surface. Along this line water from the lower zone would rise to land surface in wells, but they would not flow. It follows then that the land-surface altitude along the boundary also determines the altitude of the piezometric surface along the same line. By plotting these altitudes it was found that the piezometric surface as of 1905–07 had a northerly component of slope of about 1¾ feet per mile, declining in about 65 miles from 240 feet above sea level at the southern edge of T. 19 S., R. 19 E. (a few miles north of Stratford), to 125 feet above sea level at the Fresno-Merced County line. West of the boundary line plotted by Mendenhall no wells were known to tap the lower water-bearing zone, so it is impossible to determine the direction or magnitude of the slope of the piezometric surface west of the initial artesian area.

Forbes (unpublished report) stated that the piezometric surface of the deep horizon (lower water-bearing zone) throughout the Huron area was a nearly flat surface at 235 feet above sea level prior to the first heavy draft on the lower zone in 1917. This conclusion was based on water-level measurements in several wells drilled for the Boston Land Co. near Westhaven in that year, upon a reported water-level altitude of 235 feet in a well in sec. 26, T. 19 S., R. 16 E. reported as being 1,200 feet deep, and an altitude of 233 feet in a well in sec. 3, T. 20 S., R. 16 E. that was reported to be 860 feet deep. However, another well in sec. 3, T. 20 S., R. 16 E. reported to be 1,152 feet deep and only 25 feet north of the first well, had a reported water-level altitude in 1917 of 271 feet compared to 233 feet for its companion.

Water was reported to have stood at 254 feet above sea level in 1917 in well 20/17–11E1 at Huron, reported to have been 1,200 feet deep. If this report was correct it would suggest that the piezometric surface of the confined water sloped approximately 4½ feet per mile between Huron and the Boston Land Co. well field near Westhaven at that time.

Thus, depending upon which wells are chosen for control, the piezometric surface either was level as Forbes concluded or sloped eastward an average of approximately 3 feet per mile from the valley margin to Westhaven. Depths to water measured in July and August 1922 in wells 17/17–33N3 and 18/17–7N2, 1,700 and 1,800 feet deep respectively, indicated a northeasterly slope of the piezometric surface of about 2⅓ feet per mile between these wells.

In summary, it would appear that the piezometric surface of the confined water prior to heavy withdrawal of ground water in the Mendota-Huron area (1917 to 1922) sloped gently to the northeast in the general direction of the axial trough of the valley. The gradient under undisturbed natural conditions is unknown, inasmuch as flowing artensian wells were drilled in the axial area of the valley as early as 1869 and there was appreciable draft on the lower zone by these wells prior to the 1905 water-level measurements made by the Geological Survey (Mendenhall, Dole, and Stabler, 1916).

Heavy irrigation draft from the lower water-bearing zone beginning about the time of World War I has lowered the piezometric surface very much in the Mendota-Huron area. Withdrawals from the aquifers of the lower zone on the margins of the area, that is, along the axial trough of the valley, in the area to the north of Lift Canal No. 3 northwest of Mendota, and in the Tulare Lake Bed, have not kept pace with withdrawals from the Mendota-Huron area, resulting in the formation of a steep westward gradient of the piezometric surface toward the area of heavy pumping. (See pls. 28 and 34.)

The water-level contours on plate 28 indicate that in 1951 the confined water in the lower zone was moving from the east and northeast toward an elongate pumping depression which extended throughout the length of the Mendota-Huron area from north to south and whose axis was only 4 to 6 miles east of the western edge of the valley in most of the area. These contours are based upon measurements of depth to water in some 700 wells made in April and May 1951. Of this number about a quarter of the measurements were eliminated from consideration because they were taken while the wells were pumping. The remaining measurements were used as the control for the contours shown on plate 28. However, many measurements reflected the fact that water from the upper zone influenced

the nonpumping level in wells, in that the water surface stood at an abnormally shallow depth. As a result only those deep water levels representing the lowest water surface were used as control for the contours. Many minor irregularities, primarily those caused by pumping in the vicinity of a control well, were ignored in drafting the contour lines. Thus, the map shows generalized contours on the piezometric surface of the lower water-bearing zone for April and May 1951 rather than instantaneous conditions at the time each measurement was made.

In order to show the change in water level that has occurred in the zone of confined water as a result of the heavy pumping draft, water-level profiles were drawn along four lines crossing the Mendota-Huron area. (See pls. 28 and 34.) Profiles were plotted for the years 1945, 1948, and 1951 and for earlier years 1940, 1938, and 1926 where measurements were available. They show that the pressure surface of the confined water has declined throughout the period of record. All four sets of profiles are generally similar, in that all show in 1951 a fairly steep westward gradient from the eastern margin of the area toward a rather flat-bottomed longitudinal trough, and a reversal of gradient resulting in an eastward slope near the western margin of the area. Comparison of the profiles for earlier years with those for April and May 1951 shows that the westward gradient of the pressure surface has steepened somewhat with continued deepening of the trough and that the axis of the trough has migrated westward in recent years as irrigation was extended farther westward toward the valley border.

Because ground water moves down the water-level gradient from areas of recharge to areas of discharge, the contours on plate 28 show that recharge takes place chiefly beyond the northeastern and northern boundaries of the area, and moves across the valley axis from the east side. The only discharge possible under present conditions is withdrawals by wells.

The water-level contour map for the spring of 1951 (pl. 28) shows certain general features that are instructive with respect to source and movement of ground water in the lower water-bearing zone. Northeast and east of the Mendota-Huron area there is little draft on the lower zone at the present time, yet water levels in deep wells in that area have continued to decline in response to the heavy pumping draft to the west. South of Westhaven the pumping depression apparently is continuous with a similar depression underlying the northern part of Tulare Lake Bed, an area where deep wells draw heavily upon a confined water body that is presumably continuous with the lower water-bearing zone of the Mendota-Huron area. As shown on plate 28, the sea-level contour closes about 3 miles north-

west of the dry Tulare Lake Bed but the 50-foot-above-sea-level contour extends southeasterly toward the lake-bed area. Extending northward from Tulare Lake Bed and roughly paralleling the Kings River and Fresno Slough as far north as Mendota, the 50-foot-above-sea-level contour roughly bounds the area under investigation. North of Mendota, in the area served with surface-water supplies from the "lift" canals 1, 2, and 3, control is not sufficient to plot a 50-foot-above-sea-level contour for 1951, but the sea-level contour bends westward and trends northwesterly roughly parallel with the canals. The 50-foot-below-sea-level contour closes about 4 miles southeast of the Fresno-Merced County line, indicating movement of water from beneath the lightly pumped canal-service area toward the pumping depression of the Mendota-Huron area. The fact that the pumping depression enclosed by the 50- and 100-foot-below-sea-level contours extends to the very western limit of irrigation development suggests that little recharge takes place along this part of the valley border.

About 2 miles south of its crossing of profile *F–G–H*, the sea-level contour bends eastward for about 5 miles, then bends southward to cross profile *J–K* near Huron. From there it extends southeasterly to close a short distance northwest of Tulare Lake Bed.

West of Huron the pressure surface rises to at least 200 feet above sea level, although there is heavy draft through numerous deep irrigation wells in this area. This feature is well illustrated on water-level profile *J-K* which shows an eastward gradient of 42 feet per mile between well 20/17–17N1 and well 20/17–11N1 toward the main pumping depression of the area. Wells within the area of shallow water levels west of Huron appear to be somewhat deeper than the average for the Mendota-Huron area, ranging in depth from about 1,500 to 2,200 feet. Water temperatures taken at pump discharges appear to be abnormally low; certainly much lower than the average for wells of 2,000-foot depth in the Mendota-Huron area. The discharge temperatures for wells tapping these waters range between 72° and 82° F, instead of the 85- to 95-degree range generally characteristic of the deeper wells of the Mendota-Huron area (see p. 470). These wells yield water more closely related in chemical quality to the waters of the west-side surface streams and the upper water-bearing zone (p. 459) than to the typical waters of the lower water-bearing zone. The shallow water levels, abnormally low water temperatures, and chemical quality of the water in this area, combined with the fact that the diatomaceous clay confining bed is not recognized in electric logs in this vicinity (geologic section *J-K*), all suggest that the upper and lower water-bearing zones are not effectively separated hydraulically in the area west of Huron. Some separation does exist, however, as shown by the 135-foot differential in water levels in wells 20/16–

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22J2 (200 feet deep) and 22J1 (1,230 feet deep), only 100 feet apart. (See pls. 29 and 34; profile *J-K*.) In fact, as shown by the profiles of 1951 for the water table in the upper zone and the pressure surface for the lower zone (profile *J-K*), the differential in water level for the two zones is 125 feet or more along all the profile from Huron west to the wells in 20/16–22J. The available evidence suggests that both water-bearing zones receive recharge from streams discharging through Pasajero and Polvadero Gaps.

DECLINE OF WATER LEVELS

Because recharge to the lower water-bearing zone in the Mendota-Huron area has been less than accumulated withdrawal the piezometric surface of the lower water-bearing zone has receded substantially since ground-water pumping for irrigation began during World War I. The piezometric surface prior to intensive development is shown on water-level profile *J-K* for a short distance between Huron and Westhaven and on profile *F-G-H* between wells 18/17–7N2 and 17/17–33N3. (See pl. 34.) Well 15/15–21B1 on water-level profile *D-E* was reported as flowing at 180 feet above sea level when drilled in 1914. No information is available regarding early water levels along profile *A-B* except the land-surface elevation of the western margin of the artesian area according to Mendenhall. Inasmuch as Mendenhall had several wells in the vicinity of Mendota for control, it is thought that the boundary is essentially correct in that area.

A general impression of the magnitude of the recession of the piezometric surface may be gained from the hydrologic profiles by comparing early water levels with levels for April and May 1951. The decline near Mendota (profile *A-B*) appears to have been on the order of 150 feet. The pressure surface at well 15/15–21B1 on water-level profile *D-E* declined 160 feet between 1914 and 1948 and may have declined an additional 55 feet by 1951, making a total of 215 feet since 1914, if well 15/15–21B1 followed the trend of other deep wells in the area between 1948 and 1951. Along water-level profile *F-G-H* a recession of 180 feet is indicated between 1905 and 1951 at the western margin of the area of flowing wells as of 1905. Farther west at well 18/17–7N2 a decline in water level of 297 feet was recorded from 1922 to 1951. As measured on water-level profile *J-K* the decline in head for the period 1917–51 was 260 feet in well 19/18–34E1, near Westhaven, compared to 288 feet farther west at Huron.

The decline of the piezometric surface for the period 1935–51, for which accurate estimates of total withdrawals are available, is of particular interest in estimating overdraft. The magnitude and distribution of this recession are well illustrated by the water-level profiles although the water-level records are incomplete for the early

years of the period. Hydrographs of deep wells (pl. 35) show the trend of decline for a longer period than do the water-level profiles. Water-level profiles *A-B*, *D-E*, and *F-G-H* show that the recession of the piezometric surface has been more pronounced in the western part of the area than to the east. However, wells along the western part of water-level profile *J-K* in the area of possible interconnection of the upper and lower water-bearing zones (see p. 459) show less decline in water levels than do those to the east. The recession from 1948 to 1951 generally appears less than that from 1945 to 1948, probably because the 1951 levels were measured when possibly three-fourths of the pumps were shut down as contrasted to the earlier measurements by the Pacific Gas and Electric Co. made throughout the year when a greater proportion of plants were operating. Thus, the 1951 measurements by the Geological Survey which suggest some measure of recovery or at least a halt in the decline of the piezometric surface are not truly comparable with the earlier measurements as a guide to actual rates of decline.

Hydrographs of one well tapping the upper water-bearing zone, 6 wells tapping the lower zone, and 4 wells that originally tapped the lower zone but because of casing failure are now characteristic of the upper zone are presented on plate 35. (For location, see pl. 28). The distribution of the wells tapping the lower zone for which hydrographs are shown is: 2 wells in the northern district west and northwest of Mendota, and 4 wells in the southern district, two of which are in the vicinity of Five Points and two farther south in the Westhaven-Huron area. The hydrographs are based for the most part on water-level records from pump-efficiency tests made by the Pacific Gas and Electric Co. and recent measurements by the Bureau of Reclamation and the Geological Survey. The practice generally followed by the Pacific Gas and Electric Co. in making tests is to measure the water level upon arrival at the well while the pump is operating then to shut the pump off and measure the level after 5 minutes or more has passed. Thus, the so-called static water level as recorded on pump-efficiency tests is in reality a short-period recovery level rather than a static level. Engineers of the company feel that most of the pressure response to cessation of pumping takes place within 5 minutes; however, some of the variations in well drawdown which are apparent on the hydrographs may be related to variations in the length of the short-period recovery time.

As the hydrographs show, the water levels in deep wells have declined in general agreement with the increase in pumpage shown on figure 68. The water level in well 13/12–4N1 in the northernmost part of the area, about 6 miles southeast of the Fresno-Merced County line, declined about 10 feet per year between 1935 and 1939, then

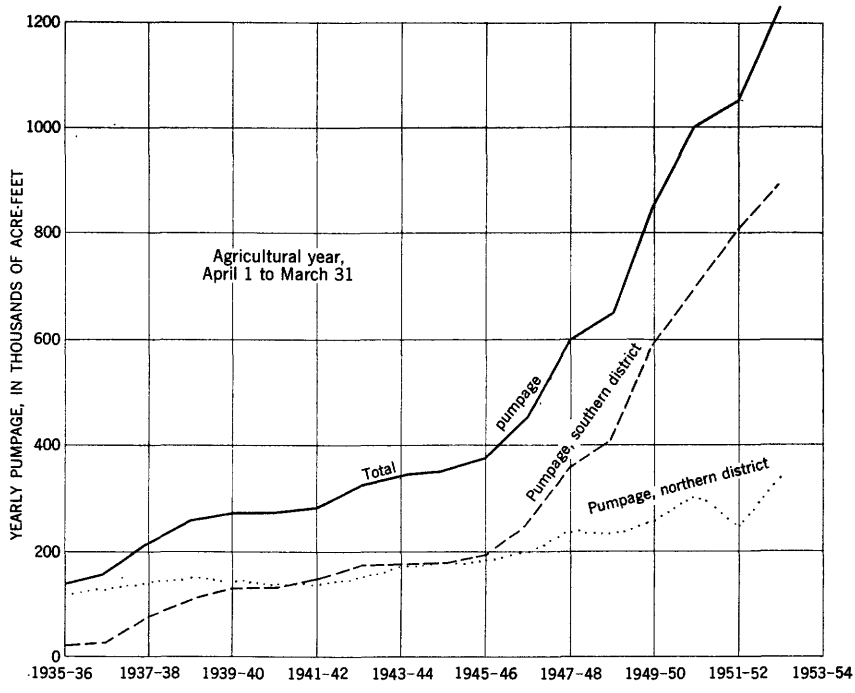


FIGURE 68.—Estimated ground-water pumpage in the Mendota-Huron area, 1935–53.

was essentially unchanged until March 1942, corresponding to a slight decrease in withdrawals from the northern district between the 1938-39 agricultural year and the 1941–42 agricultural year. After spring 1942, the decline in water level continued at about 7 feet per year through 1950.

The water-level record for well 13/14–35Q1, near the eastern margin of the area of heavy irrigation draft about 1½ miles west of Mendota, begins in 1929. The hydrograph shows that the level was essentially constant from 1929 to 1933, declined about 8 feet a year from 1933 to 1937, about 1 foot a year from 1937 to 1941, and about 4 feet a year from 1941 to 1949.

Water levels in well 17/16–18E1 (pl. 35), approximately in the center of the Mendota-Huron area, agree in general with the rate of pumpage (fig. 68) in the southern district. Beginning in 1937 the level declined steadily about 10 feet per year until 1946. After 1946 the decline increased at an accelerated rate comparable with the great increase in withdrawals in the southern district so that the decline in 1950 was on the order of 30 feet. Levels in wells 18/18–19N1 and N2, about 6 miles south of Five Points, are in general agreement with those in well 17/16–18E1, showing a gradual decline until 1946 and

a greatly accelerated decline thereafter to 1951, when the casing failed and the level began to reflect the head in the upper zone.

Records of water levels in wells 20/17–36D1, 4 miles south of Huron, and 19/18–20N1, 3½ miles northwest of Westhaven, both reflect a great increase in irrigation development in the vicinity of Huron since 1945. The Pacific Gas and Electric Co. well-location map of December 1941 indicates that few wells had been drilled in T. 19 S., T. 20 S., and T. 21 S. since Forbes (unpublished report) canvassed the area in 1926. Actual withdrawals of ground water in the Huron-Westhaven area were probably lower during the depression period of 1930 to 1940 than during the previous decade. For example, pumpage from the Boston Land Co. well field near Westhaven ranged between 7,100 and 8,000 acre-feet per year between 1942 and 1945 as compared with an average withdrawal of 12,500 acre-feet per year for the period 1917–26. This marked reduction in pumping is reflected on hydrologic profile *J–K* by the smallness of the net recession of the piezometric surface between 1926 and 1945, which at well 19/18–26N1 amounted to only about 10 feet. The 1940 measurement in well 19/18–26N1 was approximately 10 feet higher than the 1926 static level in the same well.

The hydrograph of well 19/18–14D1 (pl. 35) shows long-term trends in water level for the period 1917–51 in the Westhaven area. The water level declined approximately 64 feet between 1917 and 1926 under the influence of an average withdrawal of 12,500 acre-feet from the Boston Land Co. well field. Between 1926 and 1935 the net decline in head amounted to only 24 feet, and between 1935 and 1945 the decline was only 22 feet. After 1945 the decline in water level increased rapidly, corresponding to a rapid increase in ground-water withdrawals in the southern district (fig. 68). The decline from October 1945 to March 1950 totaled 111 feet or approximately 25 feet per year. Between March and June 1950 the casing in well 19/18–14D1 failed and by September the water level in the casing had risen 195 feet to a level corresponding to that of shallow wells in the area. In September 1950 the measured depth of the well was only 169 feet.

Hydrographs of wells 14/14–25M1, 16/15–26P1, and 18/16–26F1 (pl. 35) not only portray the general recession of water levels discussed previously but also illustrate the water-level recovery caused by casing failure. The water level in well 14/14–25M1 through 1948 shows the normal, gentle decline characteristic of wells tapping the lower water-bearing zone in the northern district, but by June 1949 the water level in the well had risen more than 50 feet. Monthly measurements thereafter by the Bureau of Reclamation show that the level no longer had the steady decline and pronounced fluctuations

characteristic of the confined water of the lower zone; in 1951 the level represented a compromise about 100 feet higher than the head in the lower zone but about 50 feet below the water table.

The water level in well 16/15–26P1 declined steadily until 1946 in conformance with levels in other wells in the vicinity, but in 1946 and 1947 rose contrary to the normal declining trend, suggesting that water from the upper zone was entering the well. This period was marked by a decline in capacity of the well from 1,000 gpm to about 800 gpm. In 1948 the water level in the well resumed the normal downward trend with a marked decline of 36 feet in nonpumping level between January and September 1948. The well was abandoned in August 1949 because of casing failure, whereupon the water level rose 146 feet and began to show the minor fluctuations characteristic of the upper water body. The water-level rise indicates that the casing collapse had essentially shut off the lower water-bearing zone.

The hydrograph for well 18/16–26F1 to 1949 is similar to those for wells 18/18–19N2 and 17/16–18E1 (pl. 35) and illustrates the pronounced decline in the piezometric surface in the southern district from 1945 on. However, water-level measurements made in 1950 and 1951 show that the nonpumping water level rose 60 feet between July 1950 and January 1951, indicating the entry of water from the upper zone in significant quantities, and a probable partial shutoff of the lower zone by casing collapse.

The hydrograph of well 16/16–18N1 is included on plate 35 to illustrate water-level fluctuations in an active well tapping only the upper water-bearing zone. The well, drilled to a 521-foot depth, is one of several irrigation wells near Cantua Creek that produce irrigation water from the upper zone. Not only is the water level much higher than in nearby wells drawing from the deep zone—in this place the difference in head would amount to about 84 feet—but the fluctuation of the water level is less pronounced than in deeper wells and the marked decline of water levels so well shown by hydrographs of wells that tap the lower water-bearing zone is not evident here. In contrast to declines of up to 30 feet per year for head in the lower zone, this upper-zone well shows a water-level decline of only about 25 feet for the 10-year periods 1943–53.

RECHARGE

PRIMARY RECHARGE

Under native conditions the only possible sources of recharge to the ground-water body in the Mendota-Huron area were influent seepage from rainfall; seepage losses from intermittent runoff in the

streams discharging from the Coast Ranges to the west onto the apron of alluvial fans; and subsurface inflow.

The average yearly precipitation in the Mendota-Huron area ranges from about 7 inches at Mendota in the northern part to 5 inches west of Tulare Lake Bed (Calif. State Water Resources Board, 1951, p. 315 and pl. 3). This quantity is so small that only in very exceptional storms would there be any possibility of seepage from rainfall beyond the soil zone. Under normal circumstances all this water is lost by evaporation or by transpiration from the soil zone. Therefore, it is assumed that rainfall does not contribute directly by seepage to the ground-water supply.

The average annual runoff for the west-side streams from Panoche Creek to Los Gatos Creek, inclusive, has been estimated as 48,400 acre-feet for the period 1889–1929 (Calif. Div. Water Resources, 1930, p. 67). Little Panoche Creek to the north also discharges into the Mendota-Huron area. Although an estimate of runoff for that stream is not available, addition of runoff from its drainage basin would increase the estimate to at least 50,000 acre-feet, and that rounded figure is considered the approximate average runoff for the west-side streams discharging onto the Mendota-Huron area.

Seldom does the runoff from these west-side streams reach the axial trough of the valley. Although a small part of this runoff is lost by evapotranspiration, and a small part is used for surface irrigation by means of diversion from ponds behind check dams, most of it passes downward through the soil zone and eventually reaches the water table in the upper water-bearing zone. The writers estimate that roughly 60 to 80 percent or 30,000 to 40,000 acre-feet a year is contributed on the average to the ground-water body.

Under the native conditions of gentle northeastward slope of the water table and of the piezometric level of the confined water to the axial trough of the valley, the only opportunity for subsurface inflow was through permeable gaps on the southwest flank of the area. Pasajero and Polvadero Gaps at the east end of Pleasant Valley are the only two such gaps. It is known that ground water moved eastward beneath Pleasant Valley under native conditions and still does. As shown by the water-level profiles of figure 73, (p. 465) the apparent gradient is gentle and the true gradient cannot be much steeper. It is also known that a steep hydraulic gradient must have existed initially through both gaps. Because neither the cross-sectional area nor the permeability of the water-bearing materials in the gaps is known, and the gradients are uncertain, the subsurface discharge through Pasajero and Polvadero Gaps to the San Joaquin Valley cannot be calculated at this time. It is believed not to exceed a few second-feet at most.

however, and, thus, probably does not exceed 0.2 percent of the current pumping draft. It is considered so small as to be of no consequence in considering quantities of water required for importation to balance supply and demand in the area.

Thus, under native conditions, seepage from west-side streams was the only substantial source of recharge to the Mendota-Huron area and is estimated to have been 30,000 to 40,000 acre-feet a year on the average.

SECONDARY RECHARGE

Drawdown of the water level during the period of increasing pumping draft has developed a substantial westward gradient of the piezometric level in the lower water-bearing zone along the eastern border of the Mendota-Huron area (pls. 28 and 34). This means that ground water is now moving southwest beneath the axis of the valley and that the lower water-bearing zone is receiving "secondary" or induced recharge from the east side of the valley along the full reach of the Mendota-Huron area.

The water levels in the upper water-bearing zone are not closely controlled and a water-table map was not included in the report for that reason. However, the available information, including water-level profiles for the upper zone shown on plate 34, indicates that in areas of heaviest pumping from the upper zone, such as the area from Tranquillity to and beyond Five Points, a westward gradient extending east of the valley axis has been developed in the upper zone also. Northwest of Mendota, north of Lift Canal No. 3, irrigation is chiefly by surface water from the several canals, and the water table is shallow. Here the water table slopes gently to the northeast, however, except on the south flank of a local recharge mound beneath the service area of the "lift" canals—extending about 10 miles east from Oro Loma in 1952.

For purposes of this report, and the immediate problems of the State and other agencies in considering the amount of surface water that would have to be imported to replace the ground water presently being "mined" in the Mendota-Huron area, it is of interest to obtain at least a rough quantitative estimate of the magnitude of this "secondary recharge" or subsurface inflow.

By far the greatest part of the secondary recharge to the Mendota-Huron area is through the lower water-bearing zone and the quantity of this recharge can be calculated roughly. The calculation can be made by use of the equation $Q=TIL$ and, thus, requires estimates for the transmissibility, T; the hydraulic gradient, I; and the length of the percolation face, L.

The coefficient of transmissibility may be defined as the volume of water in gallons, at the prevailing water temperature in the aquifer,

that will move in 1 day under a unit hydraulic gradient (100 percent), through a vertical strip of the aquifer 1 foot wide extending the full saturated thickness of the aquifer. For convenience it may be expressed as the water in gallons per day moving across a section of the aquifer 1 mile wide for each foot per mile of hydraulic gradient.

The percolation face along which movement of ground water in the lower water-bearing zone is here considered is line *N–P*, plate 28. This line extends from South Dos Palos southeast along the 50-foot-above-sea-level contour to Tulare Lake Bed southeast of Westhaven. This line is as close to the axial trough as practical but still within the area where hydraulic gradient is known approximately. The length of line *N–P* is approximately 71 miles.

The average hydraulic gradient between the plus 50-foot and the sea-level contour for the generalized contours of plate 28 (nonpumping level of April and May 1951) is roughly 15 feet to the mile.

The transmissibility of the lower water-bearing zone near Westhaven has been computed from a well-field recovery in 1926 to be on the order of 120,000 gpd per foot. (See p. 429.) Field tests of transmissibility have not been obtained to date by the Geological Survey for the reach of the line from Westhaven to South Dos Palos. However, information available from many pump tests suggests that the specific capacity of wells tapping the lower water-bearing zone along the reach of line *N–P* is reasonably consistent, commonly ranging between 35 and 60 gpm per foot of drawdown. Therefore, although the thickness of the lower zone decreases northwestward from 1,100 feet at Westhaven to about 750 feet near Tranquillity and to about 400 feet at the north end of the section, the rough consistency of the specific-capacity values suggests that increase in permeability northwestward must be roughly inversely proportional to the decrease in thickness, and thus that the transmissibility (the product of permeability and thickness) does not change substantially from south to north.

The quantity of water moving across percolation face *N–P* in the lower water-bearing zone under the conditions specified would be

$$120{,}000(T)\times 15(I)\times 71(L)=128 \text{ mgd}$$

$$=394 \text{ acre-feet/day or } 145{,}000 \text{ acre-feet/yr}$$

Two uncertainties in this estimate are the transmissibility and the hydraulic gradient. The transmissibility is essentially a constant at any one place and a close approximation of the transmissibility along this 71-mile reach can be obtained if satisfactory field-pumping tests can be carried out at 5- to 10-mile intervals along the reach. The Geological Survey proposes to obtain field determinations of transmissibility at several places along or near this reach as a part of the continuing program in this area.

The hydraulic gradient of about 15 feet to the mile, as taken from plate 28, represents a transient condition, for, at the time the depth-to-water measurements were made (April and May 1951), most of the irrigation-well pumps had been idle for a period of 2 to 4 weeks. For 9 months or more of the year, however, nearly all the pumps are operating, most of them 24 hours a day. The contours thus represent a temporary recovery of the piezometric level, the gradient represents about the flattest gradient during the year 1951, and for most of the year the continuous operation of the irrigation wells must have steepened it appreciably. Therefore, the estimate of 145,000 acre-feet a year is believed to be too conservative for the average conditions of 1951. For purposes of this report it is estimated that in 1951 the secondary recharge entering the lower water-bearing zone by movement southwest across the axis of the valley was on the order of 150,000 to 200,000 acre-feet a year.

The volume of this secondary recharge in the future will depend not only upon the pumping draft from the lower water-bearing zone in the Mendota-Huron area but also on the supply to and draft from the lower water-bearing zone east of the valley axis. Nevertheless, the composite effect of supply and draft both east and west of the axis will be reflected in the hydraulic gradient west from the axis and that gradient can be used to estimate, at least roughly, the quantity of secondary recharge to the lower zone.

The recharge to the upper water-bearing zone by westward movement from the axial reach is estimated, by the same means, to be on the order of 20 to 30 thousand acre-feet a year in 1951.

If we add the 20 to 30 thousand acre-feet of recharge to the upper water-bearing zone westward from the axis to the estimated secondary recharge of 150,000 to 200,000 acre-feet to the lower water-bearing zone, the estimated recharge from both sources would appear to be on the order of 200,000 acre-feet, plus or minus 50,000 acre-feet.

The induced recharge of roughly 200,000 acre-feet from the northeast or axial side of the area added to the estimated average primary recharge of 30,000 to 40,000 acre-feet from the west-side streams suggests a total recharge in 1951 of 230,000 (plus or minus 50,000) acre-feet.

OVERDRAFT OR WATER BEING MINED

The pumpage from the Mendota-Huron area in 1950–51 is estimated to have been 1 million acre-feet. (See table 1.) A survey of acreage under irrigation in various types of crops in 1950 was made by the Bureau of Reclamation. From this survey the California Division of Water Resources estimated the amount of water required for the different types of crops. The estimated consumptive use of applied water was on the order of 600,000 acre-feet for that year.

The irrigated area, from the crop survey, including fallow land, was 504,000 acres. The average year-round amount of fallow land was estimated as 136,000 acres. Because there is little surface drainage of irrigation water out of the Mendota-Huron area to Fresno Slough or other drains, these figures suggest a net use of pumped ground water of 600,000 acre-feet or 60 percent of the pumpage. The residual 40 percent represents pumped ground water that passes downward below the root zone and moves down to the water table in the upper water-bearing zone.

If the net ground-water draft was on the order of 600,000 acre-feet in 1950–51, and the replenishment to the ground-water body, both primary and secondary, was on the order of 230,000 acre-feet, the net overdraft was roughly 370,000 acre-feet. Because of the approximate nature of the estimates for the several elements, it is suggested that a rough figure of 350,000 acre-feet, plus or minus 100,000 acre-feet, can be considered as a first approximation of the water being mined from the Mendota-Huron area as of 1951.

If surface water should be imported in large quantities and applied to the land surface of the Mendota-Huron area, either directly for irrigation or for replenishment and storage in the ground-water reservoir, the net effect would first be a buildup of the water table in the upper water-bearing zone and the development or steepening of a general northeastward water-table gradient to the valley axis. Secondly, if the net replenishment to the lower water-bearing zone, by downward movement from the upper water-bearing zone through wells piercing the blue clay, through the overlying semiconfined deposits in areas where the blue clay is absent, or by secondary recharge by subsurface inflow from the northeast, became greater than the pumping draft from that zone, the piezometric level would recover accordingly. Eventually, if it were restored to a horizontal surface or a northeasterly gradient were developed, all secondary recharge from the northeast would cease, and the only local replenishment would then be the seepage from west-side streams as it was in the beginning. Under those conditions, the requirements for import would be the total consumptive use, less the average west-side stream seepage of possibly 30,000 to 40,000 acre-feet. Thus, for the consumptive-use requirements in 1950, importation to satisfy consumptive use of about 570,000 acre-feet would have been necessary; plus water to compensate for any ground-water outflow or overland waste to the Fresno Slough and San Joaquin River drainage system, plus water sufficient to maintain or develop a proper long-term salt balance.

In 1952–53 the estimated pumping draft had increased to 1,240,000 acre-feet. If the consumptive-use requirements remained constant at 60 percent of water pumped, they would equal 740,000 acre-feet in

1952–53 and imports to satisfy consumptive use of at least 700,000 acre-feet would be required, plus additional requirements for outflow and salt balance.

From the long-range viewpoint, and if the ground-water reservoir of the Mendota-Huron area were to be utilized for holdover storage, the natural replenishment from local west-side streams thus would be the only permanent local source of supply.

CHEMICAL QUALITY

In the Mendota-Huron area the character of the waters in the sediments of the upper and lower water-bearing zones differs greatly in total concentration of dissolved salts and in the relative abundance of various constituents. Within the zones lateral changes in chemical character of the ground waters also occur and minor vertical changes are noticeable, especially in the upper water-bearing zone.

The chemical composition of typical waters in the Mendota-Huron area is shown on a bar graph, figure 69. All analyses used on this figure as well as those on figures 70 to 72 are listed in the table on pages 453 to 455. Constituents are listed as equivalents per million and percentage reacting value in the same combinations in which they appear on the graphs. The heights of the columns are proportional to the quantities of the constituents as expressed in equivalents per million. Hardness is measured to the top of the magnesium segment and can be read in parts per million on the scale at the right margin. The chemical character of waters yielded by the principal zones and minor subdivisions is shown on plate 36 by means of geochemical sections *A–B–C*, *F–G–H*, and *J–K* across the northern, central, and southern parts of the area, respectively, and by section *L–M* across Pleasant Valley.

Equivalents per million expresses the concentration of each constituent in terms of chemical equivalents rather than by weight per million parts of water (ppm). In solutions found in most natural waters the negative radicals (anions) and the positive radicals (cations) must be chemically equivalent, at least within the limits of permissible experimental errors. An analysis expressed in parts per million may be converted to equivalents per million by dividing the concentrations given in parts per million by the equivalent weights (combining weights) of the respective ions. The equivalent weight of an ion is obtained by dividing the molecular weight (atomic weight in the case of ions composed of single elements, such as calcium, magnesium, sodium, potassium, chloride, and fluoride) by the valence. Percentage reacting value is calculated from the analysis expressed in equivalents per million and is a ratio of each anion or cation to the sum of the anions or cations, respectively, expressed as a percentage.

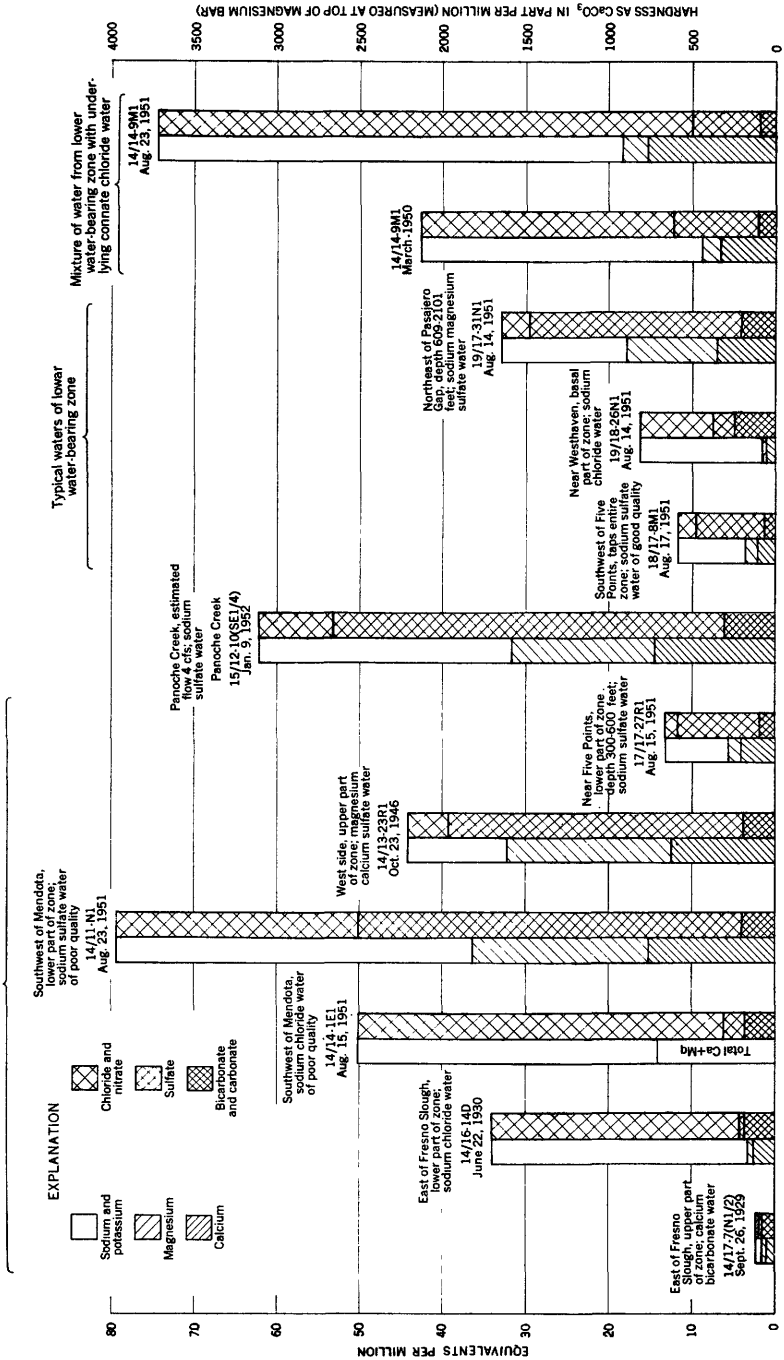


FIGURE 69.—Chemical composition of selected surface water and ground water in the Mendota-Huron area, California.

	Stream	Sampling Point	Date	Approximate dissolved solids(ppm)	Flow (cfs)
1	Little Panoche Creek	13/11-21 (SE/NE)	1-7-52	1160	2.0
2	Do.	13/11-19 (SE corner)	5-22-30	3790	0.02
3	Panoche Creek	15/12-10 (SE ¼)	1-9-52	3940	4.0
4	Do.	15/11-27 (W ½)	9-9-31	2070	2.0
5	Do.	do.	5-22-30	2020	2.0
6	Silver Creek	15/12-32 (NW ¼)	5-22-30	6970	0.03
7	Do.	do.	9-9-31	9000	0.03
8	Cantua Creek	17/15-31 (NW corner)	1-8-52	823	0.5
9	Warthan Creek	21/15-7 (SW ¼)	1-8-52	990	6.0
10	San Joaquin River	below Friant Dam	5-21-48	24	
11	San Joaquin River	at Mendota Pool	10-18-48	26	
12	Kings River	at U.S. Highway 99	4-26-48	25	

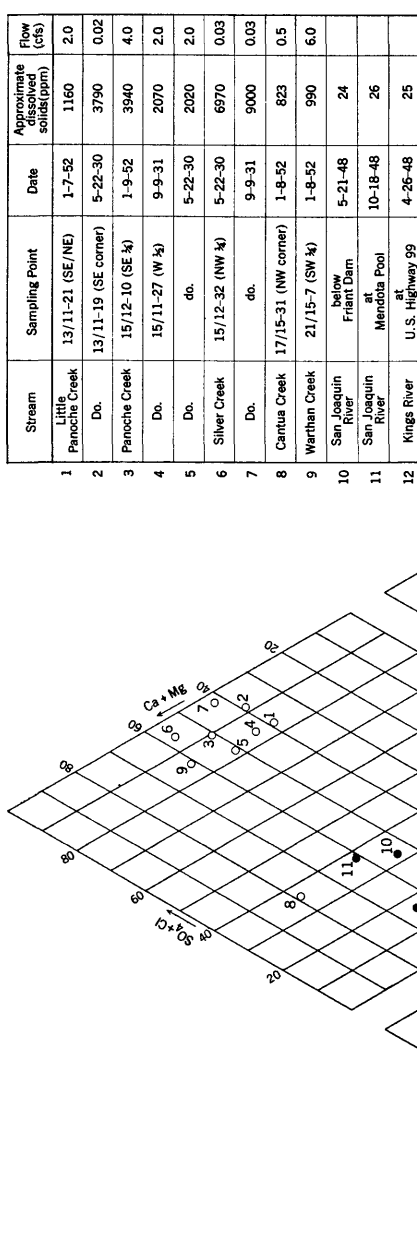
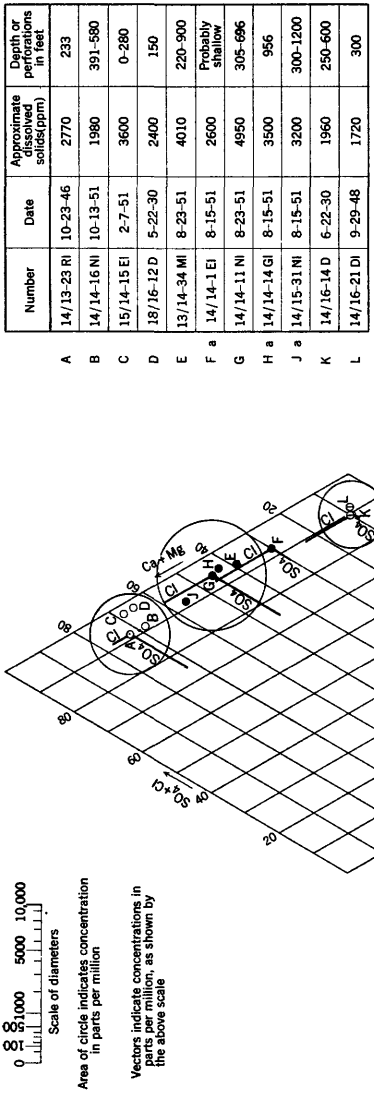


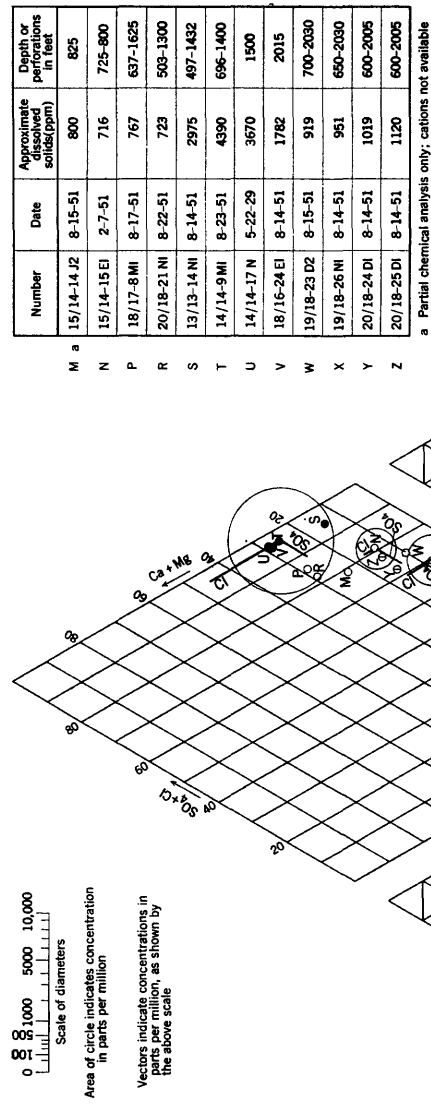
FIGURE 70.—Chemical character of waters from selected streams in or near the Mendota-Huron area, California.



	Number	Date	Approximate dissolved solids(ppm)	Depth or perforations in feet
A	14/13-23 R1	10-23-46	2770	233
B	14/14-16 N1	10-13-51	1980	391-580
C	15/14-15 E1	2-7-51	3600	0-280
D	18/16-12 D	5-22-30	2400	150
E	13/14-34 M1	8-23-51	4010	220-900
F a	14/14-1 E1	8-15-51	2600	Probably shallow
G	14/14-11 N1	8-23-51	4950	305-696
H a	14/14-14 G1	8-15-51	3500	956
J a	14/15-31 N1	8-15-51	3200	300-1200
K	14/16-14 D	6-22-30	1960	250-600
L	14/16-21 D1	9-29-48	1720	300

a Partial chemical analysis only; cations not available

FIGURE 71.—Chemical character of waters from the upper water-bearing zone in the Mendota-Huron area, California.



	Number	Date	Approximate dissolved solids(ppm)	Depth or perforations in feet
M [a]	15/14-14 J2	8-15-51	800	825
N	15/14-15 E1	2-7-51	716	725-800
P	18/17-8 M1	8-17-51	767	637-1625
R	20/18-21 N1	8-22-51	723	503-1300
S	13/13-14 N1	8-14-51	2975	497-1432
T	14/14-9 M1	8-23-51	4390	696-1400
U	14/14-17 N	5-22-29	3670	1500
V	18/16-24 E1	8-14-51	1782	2015
W	19/18-23 D2	8-15-51	919	700-2030
X	19/18-26 N1	8-14-51	951	650-2030
Y	20/18-24 D1	8-14-51	1019	600-2005
Z	20/18-25 D1	8-14-51	1120	600-2005

[a] Partial chemical analysis only; cations not available

FIGURE 72.—Chemical character of waters from the lower water-bearing zone in the Mendota-Huron area, California.

Chemical analyses of selected surface and ground waters in or near the Mendota-Huron area

[Asterisks indicate sum of constituents estimated from specific conductance. See figs. 69-72 for locations]

Sampling point or well No.	Date sampled	Sum of determined constituents ppm	Equivalents per million (upper number), percent of reacting value (lower number), total for indicated cations and anions					
			Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na+K)	Carbonate and bicarbonate (CO_3+HCO_3)	Sulfate (SO_4)	Chloride, nitrate and fluoride (Cl+NO_3+F)
Stream samples								
Little Panoche Creek, 13/11-21 (SE/NE)	1- 7-52	1,160	4.64 23.6	2.96 15.0	12.09 61.4	3.05 15.2	3.60 17.9	13.47 66.9
Little Panoche Creek, 13/11-19 (SE corner)	5-22-30	3,790	13.89 21.1	12.00 18.2	39.97 60.7	5.45 8.3	9.46 14.4	50.95 77.4
Panoche Creek, 15/12-10 (SE¼)	1- 9-52	3,940	14.92 23.6	17.43 27.6	30.84 48.8	6.26 10.3	46.01 75.5	8.67 14.2
Panoche Creek, 15/11-27 (W½)	9- 9-31	2,070	5.59 16.9	9.04 27.4	18.38 55.7	5.10 15.4	22.21 67.3	5.70 17.3
Panoche Creek, 15/11-27 (W½)	5-22-30	2,020	7.11 22.1	9.36 29.0	15.83 49.0	5.20 16.1	22.25 68.9	4.85 15.0
Silver Creek, 15/12-32 (NW¼)	5-22-30	6,970	19.51 17.8	42.37 38.7	47.54 43.4	5.70 5.2	88.82 81.2	14.90 13.6
Do	9- 9-31	9,000	19.83 14.2	40.66 29.2	78.94 56.6	4.75 3.4	108.78 78.0	25.90 18.6
Cantua Creek, 17/15-31 (NW corner)	1- 8-52	823	2.74 17.4	9.70 61.5	3.34 21.2	10.05 63.6	4.95 31.3	0.81 5.1
Warthan Creek, 21/15-7 (SW¼)	1- 8-52	990	4.49 29.2	4.93 32.1	5.96 38.8	2.26 14.3	11.83 74.8	1.72 10.9
San Joaquin River below Friant Dam	5-21-48	24	0.15 33	0.10 22	0.21 46	0.29 67	0.09 21	0.05 12
San Joaquin River at Mendota Pool	10-18-48	26	0.20 41	0.10 20	0.19 39	0.31 63	0.04 8	0.14 29
Kings River at U. S. Highway 99	4-26-48	25	0.24 50	0.07 15	0.17 35	0.41 84	0.05 10	0.03 6

Chemical analyses of selected surface and ground waters in or near the Mendota-Huron area—Continued

Sampling point or well No.	Date sampled	Sum of determined constituents ppm	Equivalents per million (upper number), percent of reacting value (lower number), total for indicated cations and anions					
			Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na+K)	Carbonate and bicarbonate (CO_3+HCO_3)	Sulfate (SO_4)	Chloride, nitrate and fluoride (Cl+NO_3+F)
Ground waters of the upper water-bearing zone								
14/13-23R1	10-23-46	2,770	12.48 28.2	19.73 44.5	12.11 27.3	3.77 8.5	35.36 80.0	5.13 11.5
14/14-16N1	10-13-51	1,980	7.98 25.4	13.49 42.9	9.98 31.7	2.88 9.1	25.40 80.4	3.31 10.4
15/14-15E1	2- 7-51	3,600	26.45 33.5	11.51 32.4	12.76 34.1	1.90 5.1	31.23 83.5	4.25 11.4
13/14-34M1	8-23-51	4,010	11.38 17.6	14.06 21.7	39.32 60.7	4.00 6.2	35.39 55.2	24.70 38.6
14/14-1E1	8-15-51	*2,600			36.09 70.0	3.74 7.4	2.56 5.1	44.00 87.5
11N1	8-23-51	4,950	14.82 18.8	21.13 26.8	42.87 54.4	4.29 5.3	46.43 57.9	29.47 36.8
14G1	8-15-51	*3,500			47.40 57.5	4.20 4.5	58.24 62.5	30.74 33.0
14/15-31N1	8-15-51	*3,200			25.66 45.8	3.84 7.1	33.28 61.6	16.92 31.3
14/16-14D	6-22-30	1,960	2.71 8.0	0.63 1.8	30.74 90.2	3.80 11.2	0.38 1.1	29.90 87.7
21D1	9-29-48	1,720	1.90 6.2	0.61 2.0	28.01 91.8	2.46 8.4	0.02 0.1	26.79 91.5
14/17-7	9-26-29	117	1.05 47.9	0.45 20.5	0.69 31.5	1.60 73.1	0.29 13.2	0.30 13.7
17/17-27R1	12-14-51	868	4.09 31.8	1.40 10.9	7.39 57.3	1.90 14.0	10.22 75.4	1.44 10.6

Ground waters of the lower water-bearing zone

13/13-14N1	8-14-51	2,975	5.49 11.0	1.97 4.0	42.18 85.0	2.23 4.5	10.45 21.2	36.66 74.3
14/14-9M1	3- -50	2,642	6.54 15.3	2.22 5.2	34.02 79.5	2.23 5.2	10.07 23.5	30.48 71.2
9M1	8-23-51	4,390	15.07 20.5	3.21 4.4	55.12 75.1	2.06 2.7	8.29 11.0	65.24 86.2
17N	5-22-29	3,670	10.80 17.6	6.41 10.4	44.22 72.0	1.75 2.8	15.18 24.7	41.50 72.4
18/16-24E1	8-14-51	1,782	6.74 22.8	1.56 5.3	21.31 72.0	0.98 3.3	6.27 20.9	22.70 75.8
15/14-14J2	8-15-51	*800			8.48 76.5	2.53 20.9	8.32 68.6	1.27 10.5
15E1	2- 7-51	716	1.00 9.0	0.41 3.7	9.69 87.3	2.13 19.5	7.07 64.7	1.72 15.7
18/17-8M1	8-17-51	767	1.95 17.8	1.15 10.5	7.83 71.6	1.67 13.6	8.43 68.5	2.20 17.9
20/18-21N1	8-22-51	723	2.15 18.8	1.15 10.1	8.13 71.0	1.93 17.5	7.72 69.9	1.38 12.5
19/18-23D2	8-15-51	918	1.15 7.4	0.38 2.5	13.91 90.1	3.82 24.6	3.14 20.2	8.55 55.1
26N1	8-14-51	951	0.95 5.9	0.38 2.4	14.78 91.7	4.95 30.3	2.64 16.2	8.74 53.5
20/18-24D1	8-14-51	1,019	1.25 7.0	1.32 7.4	15.22 85.6	4.65 26.9	3.14 18.2	9.48 54.9
25D1	8-14-51	1,120	1.65 8.8	0.82 4.4	16.31 86.8	4.10 21.4	3.77 19.7	11.28 58.9

QUALITY OF SURFACE WATERS

Because the upper water-bearing zone receives recharge from the surface waters entering the San Joaquin Valley, the chemical characteristics of these surface waters directly affect the chemical character and quality of the ground water in the upper zone. With local exceptions two general types of surface waters occur. The east-side water, which runs off the relatively insoluble silicate rocks of the Sierra Nevada basement complex, is a calcium bicarbonate water generally containing less than 100 ppm of dissolved solids. The chloride concentration in this water exceeds the sulfate and the sodium, and, in terms of equivalents per million, is usually about 35 percent of the cations, or bases.

In this report, terms describing the general chemical character of a water are used in particular senses, as in the following examples: "calcium bicarbonate" designates a water in which calcium amounts to 50 percent or more of the cations and bicarbonate to 50 percent or more of the anions, in chemical equivalents; "sodium-calcium bicarbonate" designates a water in which sodium and calcium are first and second, respectively, in order of abundance among the cations but neither amounts to 50 percent of all the cations; and "sodium-sulfate bicarbonate" designates a water in which sulfate and bicarbonate are first and second in order of abundance among the anions, as above.

In the Mendota-Huron area, the east-side surface waters influence the chemical character of the ground waters in the upper water-bearing zone only locally along the eastern border, specifically in the immediate vicinity of the San Joaquin River, Fresno Slough, and the Kings River.

The west-side surface waters originate in drainage basins underlain by Tertiary and Cretaceous marine sediments of the Coast Ranges, which contain abundant readily soluble sulfate and carbonate compounds. In general, the west-side surface waters contain high concentrations of sulfate, and sodium usually exceeds 40 percent and in some streams 50 percent of total cations. Dissolved solids range from slightly less than 1,000 ppm to as much as 9,000 ppm. The concentrations of the various constituents in the surface waters also vary considerably from stream to stream, in contrast to the fairly constant chemical character of the east-side surface waters. Extreme fluctuations in rainfall and local differences in the chemical makeup of the marine sediments appear to account for the wide variations in chemical character of waters of several west-side streams.

Figure 70 is a geochemical graph showing the chemical character of the surface waters that recharge the upper water-bearing zone of the

Mendota-Huron area. On this graph the percentage reacting values (percentage equivalents) for the principal constituents of the waters are plotted. Anions (acid radicals) are plotted in the lower right triangle and cations (basic radicals) are plotted in the lower left triangle. The single-point plots in the diamond field indicate the overall character of the water. They can be plotted directly or by projection of the points in the cation and anion triangles. The diagram is one utilized and described by Piper (1945).

WATERS IN UPPER WATER-BEARING ZONE

Ground waters of the upper water-bearing zone throughout the Mendota-Huron area generally contain high concentrations of calcium and magnesium sulfate. Pronounced changes in the chemical character of these waters occur laterally along the eastern and western margins of the area, and gradational changes occur vertically with increasing depth. On the basis of these gradational but significant changes with increasing depth, the ground waters of the upper zone may be divided into two types.

As indicated on plate 36, the ground waters occurring in the uppermost 200 to 300 feet below the land surface are predominantly calcium and magnesium sulfate waters with total determined constituents averaging about 3,000 ppm, and a percent sodium of about 35. The percent sodium (Scofield, 1933) indicates the relation of sodium to total bases in terms of equivalents—it is the equivalents per million of sodium divided by the equivalents per million of calcium, magnesium, sodium, and potassium, multiplied by 100. Hardness expressed as calcium carbonate ranges from 1,200 to 1,600 ppm, approximately 90 percent being noncarbonate hardness. With the exception of local variations caused by differences in quality of the surface streams that provide recharge along the western margin of the area, the chemical character of the ground waters tapped by shallow wells is relatively constant throughout the area.

An abrupt change occurs along the eastern border of the area, where the water from the west side with high concentration of sulfate merges into the calcium and sodium bicarbonate ground water of low dissolved solids found at shallow depth on the east side of the San Joaquin Valley. Along most of the reach the contact is sharp, and within a matter of a few miles a pronounced change in chemical character can be observed. Locally, however, the contact is indistinct, and a gradational change in chemical character occurs over a belt ranging from 5 to 10 miles in width. This striking change in chemical character was first demonstrated by Mendenhall (Mendenhall, Dole, and Stabler, 1916, pl. 2).

The chemical character of the waters contained in the deposits from 200 to 300 feet below land surface down to the top of the diatomaceous clay has considerable lateral variance (pl. 36), but these waters can be distinguished from the overlying shallower waters by a gradual decrease in dissolved solids along with an increase in percent sodium with increasing depth. A comparison of these waters with the shallower ground waters shows a decrease in total determined constituents to about 1,500 ppm, and an increase in percent sodium to about 55 in the deeper waters. Hardness decreases with depth from 1,200 to 1,600 to 350 to 550 ppm, approximately 90 percent being noncarbonate hardness.

Locally, where permeable sand immediately overlies the diatomaceous clay, as in the vicinity of Five Points where pumping directly from the upper zone is greatest (see p. 428), ground water of much better quality is found. (See section *F–G–H*, pl. 36.) The total determined constitutents of this type of water average around 850 ppm, and the percent sodium about 60. Hardness ranges from 250 to 300 ppm, approximately 64 percent being noncarbonate hardness.

Locally, along the eastern border of the Mendota-Huron area, approximately along the axis of the San Joaquin Valley, ground waters containing extremely high sulfate and chloride concentrations occur in the basal portion of the upper water-bearing zone, immediately above the diatomaceous clay. The total determined constituents of this ground water of poor quality average about 5,000 ppm and the percent sodium about 55. Hardness ranges from 1,300 to 1,800 ppm, almost 90 percent being noncarbonate hardness. The ratio of sulfate to chloride is on the order of 2 to 1, generally about 2,000 ppm of sulfate to 1,000 ppm of chloride. With the exception of an area of about 20 square miles immediately west and southwest of Mendota, throughout which the occurrence of poor-quality water is uniform, the geographical distribition of this type of water along the eastern margin of the area is extremely irregular.

Figure 71, a geochemical graph, shows the relation between typical ground waters from the upper part of the upper water-bearing zone; waters from the lower part of the upper zone west and southwest of Mendota; and waters from the lower part of the upper zone east of Fresno Slough near Mendota. The highly concentrated waters in the Mendota area (analyses *E*, *F*, *G*, and *H*) plot at an intermediate position but on a line between waters from east of Fresno Slough (represented by analyses *L* and *K*) and typical west-side upper-zone waters (represented by analyses *A*, *B*, *C*, and D) which suggests that the concentrated ground waters near Mendota are a mixture of waters from both east and west.

WATERS IN LOWER WATER-BEARING ZONE

Ground waters contained in the deposits of the lower water-bearing zone originally were effectively separated from overlying waters throughout most of the Mendota-Huron area by the diatomaceous clay. However, most wells tapping the lower water-bearing zone admit water from the upper water-bearing zone either through perforations or casing leaks above the clay, or down the gravel envelope through the clay. Because of the large head differential developed by the heavy pumping from the lower zone, these upper-zone waters move down to the lower zone when the pumps are idle and are drawn back into the wells when pumps are operating, resulting in mixing of the waters with high concentration of solids of the upper zone with the less-concentrated native waters of the lower water-bearing zone.

Depending upon the volume and concentration of the shallow ground water in the mixture, the sum of determined constituents in samples collected in the summer of 1951 from pumped wells tapping the lower water-bearing zone ranged from 600 to 2,500 ppm. However, analyses of samples taken from wells with tight casings opposite the upper zone and with perforations restricted to the lower zone and of samples from older wells in that zone that were not gravel packed indicate that the native chemical character of the ground water in the lower zone is fairly constant and that the dissolved solids are of comparatively low concentration. The sum of the determined constituents in the native ground water confined in the lower zone averages around 800 ppm and the percent sodium about 75. Hardness ranges from 50 to 150 ppm, the carbonate hardness varying between 60 and 95 percent of the total. It is primarily a sodium sulfate water, with a noticeable increase in bicarbonate, as compared to the overlying upper-zone waters. The chloride concentration of this water is generally 100 ppm or less. Four typical analyses are shown on figure 72 (*M*, *N*, *P*, *R*).

Locally along the western margin of the area the diatomaceous clay appears to be intermittent or absent. This condition apparently allows some recharge of the lower zone by surface and shallow ground waters with high concentration of dissolved solids passing directly downward through the upper zone, especially in the vicinity of the alluvial fan of Los Gatos Creek. The chemical character of the ground water discharged by deep wells in these local areas approaches that of the waters in the upper water-bearing zone. This is well illustrated by the character of waters west of Huron as shown on geochemical section *J–K*, plate 36. The percent sodium is 50 or less, the water is high in calcium and magnesium sulfate, and the dissolved solids range from 1,000 ppm to as much as 3,000 ppm.

In the southern and southeastern parts of the Mendota-Huron area, analyses of the ground waters, taken from deep wells of the Boston Land Co. near Westhaven that are 2,000 to 2,200 feet deep, show that, at a depth of 1,800 to 2,000 feet below the land surface, the chemical character of the waters change from sodium sulfate water above to sodium chloride water below. (See profile *J–K*, pl. 36.)

Forbes (unpublished report) presents an analysis of water from well 20/18–2N1 which was reported to be perforated from 2,040 to 2,600 feet depth at that time and should be representative of this deep sodium chloride water. A comparison of the overlying waters in the lower water-bearing zone with this water shows a decrease in the concentration of sulfate from about 400 ppm in the overlying water to 22 ppm in the deep water, accompanied by an increase in bicarbonate from about 100 ppm to 336 ppm. The chloride concentration increases from about 100 ppm in the overlying waters to 542 ppm in the deep water. With the exception of the well cited above, the deeper irrigation wells in the vicinity of Westhaven produce a mixture of the normal lower-zone water and the deep sodium chloride water which averages about 900 ppm in dissolved solids and about 90 in percent sodium. This deeper water, although definitely poorer for irrigation than the overlying water, is still usable for a blend and is considered a basal water in the lower water-bearing zone.

In addition to these changes in chemical character, carbon dioxide and hydrogen sulfide have been reported from these deep wells of the Boston Land Co. The presence of these gases, accompanying increase of the bicarbonate concentration proportionate to the decrease of the sulfate concentration, has been suggested by Eaton (1935, p. 122–125) to indicate the process of sulfate reduction. Whether or not this is an extremely dilute marine-type water undergoing sulfate reduction is unknown. There is a possibility that the water is of east-side origin, as low sulfate, high sodium bicarbonate, and chloride waters are common east of the axis of the San Joaquin Valley (Eaton, 1935).

Figure 72, a geochemical graph, shows the relation between the chemical character of the typical native ground waters of the lower water-bearing zone; the underlying waters that contain high concentrations of sodium chloride and are presumed to be dilute marine connate waters (p. 421); and the deep waters near Westhaven of moderate sodium chloride concentration. In the anion triangle the three types of waters plot as distinct groups, but in the cation triangle the three types fall in the same area because all are waters of high percent sodium. Because all three are high in sodium and either chloride or sulfate, the plottings on the diamond all fall in the high noncarbonate alkali range.

UNDERLYING SODIUM CHLORIDE WATERS

In the northern and central parts of the area, at depths below the land surface of as little as 1,000 and 1,800 feet, respectively, a ground water high in sodium chloride occurs, in which the chloride concentration is at least 3,700 ppm. The depth at which this highly concentrated chloride water is found is considered in this report as the base of the lower water-bearing zone and of the fresh-water body, and the approximate top of this water along parts of lines *A-B-C* and *F-G-H* is shown on plate 36.

The lateral and vertical extent of this chloride water is only approximately known, as the distribution of wells that tap it is restricted. From the data available, it appears that the contact between the overlying fresh water and this chloride water dips westward, so that wells drilled along the western margin of the valley to depths of as much as 3,000 feet do not reach this deep poor-quality water.

Several samples collected from well 14/14-9M1 (section *A-B-C*, pl. 36) show most clearly the chemical character of the deep chloride water. This well was drilled and cased to a depth of 1,400 feet and perforations extend from below the diatomaceous clay to the bottom of the well. In March 1950 the chloride concentration was 1,081 ppm, and, after the installation of a liner in the upper part of the well to seal off a leak opposite the upper water-bearing zone, this concentration increased to 3,700 ppm of chloride by October 1951. The lower 200 feet of the well then was plugged off, and the chloride concentration was thereby reduced to 240 ppm, only slightly higher than the chloride concentration in the overlying lower water-bearing zone. Unfortunately, only a chloride analysis was run when the concentration had reached 3,700 ppm, but complete analyses were made in March 1950 and August 1951. The analysis for August 1951 is plotted on figure 72. From March 1950 to August 1951 the chloride concentration increased from 1,081 ppm to 2,310 ppm, and the calcium concentration increased from 130 to 303 ppm. The sulfate concentration decreased about 100 ppm in 1951, and the bicarbonate concentration remained fairly constant. The percent sodium decreased from 80 in March 1950 to 75 in August 1951.

It is not possible to determine accurately the diluting effect of the fresh water from the lower water-bearing zone, but a conservative estimate of the minimum dissolved solids in the deep chloride water would be about 6,000 ppm. This is based on the assumption that all the water was coming from the chloride zone when the chloride concentration was 3,700 ppm. However, this seems highly improbable when it is considered that 500 feet of perforations were opposite the lower water-bearing zone and only 200 feet or less were opposite the deep

chloride waters. Pump tests made in June 1951 and in October 1951, before and after the lower 200 feet of the well was plugged off, show 1,300 and 980 gpm capacity, respectively, indicating that approximately one-fourth of the total amount of water being pumped was from the deep chloride zone. Letting X equal the chloride concentration in the deep zone, 100 ppm the average concentration of chloride in the lower water-bearing zone, and 2,000 ppm the chloride concentration of the mixture in June 1951, we can solve for X in the following equation:

1 volume (X ppm Cl)+3 volumes (100 ppm Cl)=4 volumes (2,000 ppm Cl); therefore, X=7,700 ppm Cl

A typical dilute marine water whose chloride concentration is 7,700 ppm would have a concentration of dissolved salts of about 14,000 ppm, or approximately two-fifths the concentration of ocean water. These derived values are based on inadequate data, but they help to demonstrate the possible concentration and chemical character of the deep ground water that is high in chloride.

CHEMICAL QUALITY IN RELATION TO RECHARGE POSSIBILITIES

Artificial recharge of the water-bearing zones would be feasible throughout most of the Mendota-Huron area but because it would not be practicable to recharge zones containing waters of very poor quality there are at least two areas in which the quality of water in the upper zone is doubtful or so poor as to exclude those areas for use as ground-water storage reservoirs.

1. Throughout an area of approximately 20 square miles immediately west and southwest of Mendota the quality of the ground water in the upper zone is extremely poor. The total of determined constituents in this water is as high as 5,000 ppm, and the chloride concentration is on the order of 1,000 ppm. High concentrations of sodium chloride occur also in the water of the upper zone along the eastern border of the Mendota-Huron area. The lateral distribution of these waters is extremely irregular and further work will be required before their exact distribution can be determined.

2. Along the western margin of the Mendota-Huron area, in the waters of Little Panoche Creek, concentrations of boron range from 6 to 19 ppm and concetrations of chloride range from 475 to 1,800 ppm. Boron concentrations in the waters of Panoche Creek about 15 miles to the south, range from 6 to 9 ppm. Recharge to the upper water-bearing zone by these surface waters and their minor tributaries has seriously affected the quality of ground water immediately east of the creeks. Concentrations of boron ranging from 3 to 6 ppm occur in the ground waters of the upper zone from T. 13 S., R. 12 E. southward along the western border of the valley to T. 15 S., R. 12 E. In T.

13 S., R. 12 E. and T. 14 S., R. 12 E. concentrations of chloride in waters of the upper zone range from 400 to 1,000 ppm. In general, the concentration of boron decreases eastward to less than 1 ppm in the shallow ground water near the axis of the valley. South of Panoche Creek, the waters of the larger west-side streams entering the San Joaquin Valley generally contain less than 1 ppm of boron. Further investigation along the western margin of the Mendota-Huron area will be necessary before the distribution of waters containing critical concentrations of boron and chloride can be accurately outlined.

Considering the quality of the waters contained in the upper zone throughout the rest of the Mendota-Huron area, it seems reasonable to conclude that recharging it with a surface water of low amount of dissolved solids would produce a ground water of improved quality. The high concentrations of calcium and magnesium now present in the ground waters in the upper zone would constitute an inexpensive supply of exchangeable bases for excess sodium concentrations that occur locally in the soil and for concentrations of sodium that may possibly accumulate in the soil owing to the use of the percent ground water of the lower water-bearing zone having a high percent sodium. Because sodium disperses the soil aggregates, causing deflocculation of the soil particles and increasing drainage problems, the removal of sodium by base-exchange activity would be beneficial to the soil.

A summary of seepage experiments carried on in Kern County, Calif., by the Agricultural Extension Service of the University of California (Axtell, Lindsay, and Doneen, 1947) shows that rates of infiltration of water having a high percent sodium but a low total salt content can be improved by dissolving gypsum (hydrous calcium sulfate) in this type of water, and that an average increase of 90 percent in rates of penetration was obtained by adding gypsum to soft irrigation water that contained a high percent sodium. Eaton stated (1935, p. 109–110) that the general tendency toward high percent sodium in the deep ground waters of the Mendota-Huron area deserves serious consideration in the culture of semitolerant or tolerant crops. Eaton also states that where upper-zone waters are high in calcium and magnesium, and low in sodium, consideration should be given to the possibility of decreasing the percent sodium by perforating deep-well casings to admit water from the upper zone. Eaton further stated that, although the shallow water is high in dissolved solids and cannot be considered a very good irrigation water, it would be less detrimental to the soils over a long period of time than the deeper ground waters in which the dissolved solids are much lower but the percent sodium much higher.

GROUND-WATER CONDITIONS IN PLEASANT VALLEY

Pleasant Valley (Coalinga area) is a structural depression west of the San Joaquin Valley proper from which it is separated by Anticline Ridge, Guijarral Hills, and Kettleman Hills (pls. 28 and 29). It consists of an alluvial plain and bordering rolling uplands underlain by unconsolidated deposits that extend to depths ranging from less than 100 feet to several thousand feet. The plain extends 17 miles northwestward from Canoas Creek to the canyon of Los Gatos Creek, about 6 miles northwest of Coalinga. Its average width is about 5 miles. The land slopes from an altitude of about 935 feet near the mouth of the canyon of Los Gatos Creek to 550 feet in Pasajero Gap.

Five main streams enter the valley from the Coast Ranges. Los Gatos Creek, the largest, crosses the northern part of the valley and leaves through Pasajero Gap. It is joined in the valley by Warthan and Jacalitos Creeks, which enter from the west. Zapato and Canoas Creeks enter from the southwest and south, cross the southern part of the valley, and discharge through Polvadero Gap. These streams are intermittent and there is little surface outflow from Pleasant Valley except in wet weather.

Water pumped from wells is mainly for irrigation use, though some of it is for domestic, stock, and industrial supply. The city of Coalinga is served by a dual distribution system. Local ground water is used for lawn sprinkling and washing, but water for human consumption is imported by rail from Armona, 40 miles to the east, and distributed in a separate pipe system.

In December 1951 there were 82 irrigation wells in Pleasant Valley. These wells have an average yield of about 900 gpm, although the range in yields is from 200 to 2,000 gpm. Well depths range from 200 to 1,900 feet, but most are shallower than 500 feet.

As shown by the following table and figure 73, the estimated pumpage of ground water in Pleasant Valley averaged roughly 20,000 acre-feet a year from 1937 to 1947, but has risen sharply since then, exceeding 60,000 acre-feet in the agricultural year 1952–53 (April 1 to March 31).

Water-level measurements have been made and past records for wells in Pleasant Valley have been collected for general information on ground-water occurrence and to determine whether the ground-water body underlying that valley is continuous with the main water body of the Mendota-Huron area. To show conditions in this area, water-level profiles extending from the city of Coalinga eastward to Guijarral Hills are plotted on figure 73 (line *L-M*, pls. 28 and 29). The only base map available for most of the valley (Coalinga quadrangle, USGS) has a land-surface contour interval of 50 feet. It was impossible to interpolate well elevations with any degree of accuracy with

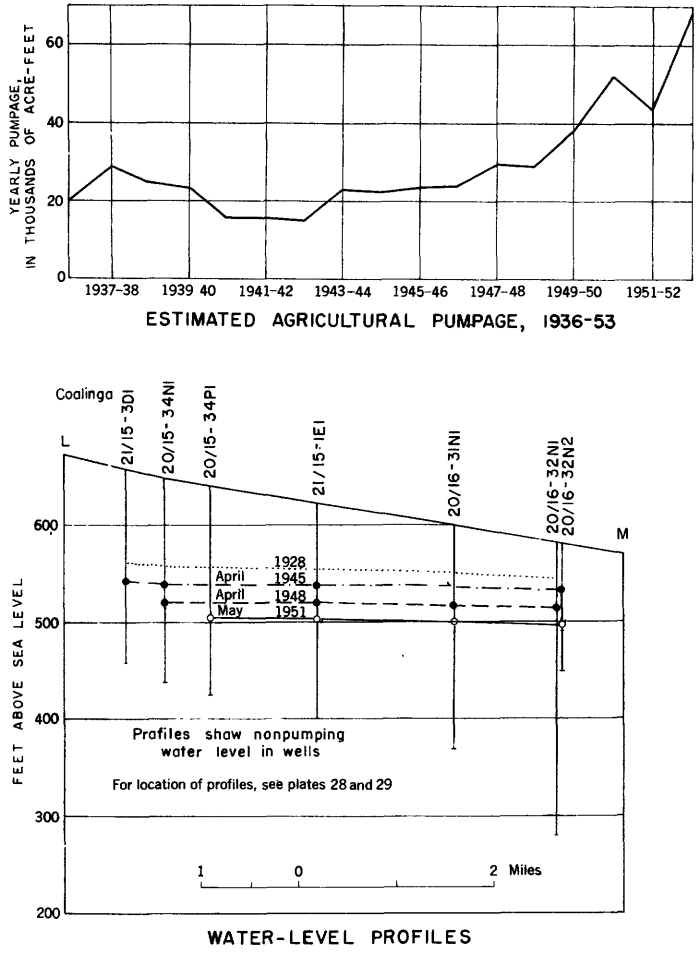


FIGURE 73.—Water-level profiles and ground-water pumpage in Pleasant Valley.

Estimated agricultural ground-water pumpage in Pleasant Valley, 1936–53

For agricultural year beginning April 1 and ending March 31; data chiefly from Pacific Gas and Electric Co. Pumpage estimated to nearest 500 acre-feet]

Year	Pumpage (acre-feet)	Year	Pumpage (acre-feet)
1936-37	20,000	1946-47	24,000
1937-38	29,000	1947-48	29,500
1938-39	24,500	1948-49	28,500
1939-40	24,000	1949-50	38,000
1940-41	16,000	1950-51	52,000
1941-42	16,000	1951-52	43,500
1942-43	14,500	1952-53	68,500
1943-44	23,000		
1944-45	22,000		
1945-46	23,500		

this map; hence, it was not practical to draw contours on the water surface for Pleasant Valley. Fortunately, levels run by the Standard Oil Co. of California to many of the wells along the line of profile *L-M* were available and it was possible to plot the water-level profile.

Early reports of "rising" water in Pasajero Gap and the fact that four wells were reported as flowing in sec. 32, T. 20 S., R. 16 E., in 1905 (Mendenhall, Dole, and Stabler, 1916, p. 243) indicate that the initial water surface in Pleasant Valley was graded to areas of natural discharge at the upper end of Pasajero Gap. Further confirmation is found in the occurrence of alkali soils described as flood-basin and basin-rim types near the upper ends of both Pasajero and Polvadero Gaps (Harradine, 1950, p. 14), indicating that evaporation took place at the land surface from swampy areas of shallow ground water in both gaps.

The available information on wells and water levels suggests that the ground water in Pleasant Valley is unconfined and that a water table exists throughout the valley. Water-level profiles along line *L-M* show that in April and May 1951 the water table sloped gently (about 2 feet per mile) from west to east toward well 20/16–32N2 near the upper (western) end of Pasajero Gap, although the level appears to have declined at least 87 feet since Mendenhall reported a flowing well in this same vicinity in 1905 (Mendenhall, Dole, and Stabler, 1916, p. 243). Water levels plotted from measurements made in the springs of 1945, 1948, and 1951 show a steady decline that averaged about 35 feet in 6 years or approximately 6 feet per year for the period. The water-level gradient toward Pasajero Gap suggests that despite the general lowering of the water table throughout Pleasant Valley, natural discharge still occurs as underflow through Pasajero Gap to the San Joaquin Valley proper.

The ground waters that underlie Pleasant Valley are sodium-sulfate waters of moderate to high concentration; the sum of determined constituents ranges from 850 to 3,000 ppm and averages about 1,500 ppm. Sulfate ranges from 400 to 1,600 ppm and averages about 700 ppm. A geochemical section (line *L-M*, pl. 36) shows the general character of the waters between Coalinga and Guijarral Hills. The percent sodium ranges from 40 to 65 but is between 40 and 50 in most of the well waters. Chloride and bicarbonate occur in moderate concentrations, but are minor constituents in comparison to sulfate. Complete chemical analyses made in 1951 (p. 576) show that boron ranges from 1 to 4.5 ppm but is between 1.5 and 2 ppm in most well waters.

The chemical character of the ground waters of Pleasant Valley is consistent with respect to the principal anion, sulfate, and the principal cation, sodium; however, there are some differences in relative

concentration of the lesser constituents from north to south, apparently related to differences in source of recharge to the ground-water body. Magnesium exceeds calcium, and bicarbonate and chloride are approximately equal in ground waters of the northern part of the valley, whereas calcium equals magnesium, and bicarbonate exceeds chloride in waters of the southern part of the valley.

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CHEMICAL ANALYSES AND DESCRIPTIONS OF WELLS

Preliminary studies indicated that marked changes in water quality occur both laterally and vertically, and that these changes were related to the geologic features of the water-bearing deposits.

This tabulation presents chemical analyses expressed in parts per million and equivalents per million. Pertinent data on all wells

sampled during August 1951 are also included in the tables. Each page of analyses is followed by a page of well descriptions. Analyses are arranged in geographical order by townships and in section number order within each township.

For the 179 partial analyses in which all the principal anions and cations were not analyzed, the sum of determined constituents is flagged. These sums were estimated to the nearest 100 ppm from plots of sum of determined constituents against specific conductance from the analyses that included the principal anions and cations. Three plots were used: one for waters with less than 5 epm chloride; and two for waters with more than 5 epm chloride (one for the northern part, and one for the southern part of the Mendota-Huron area). Of the 615 points plotted, 96 percent showed less than 10 percent deviation from the mean curves.

The sum of determined constituents given in the table of complete analyses, (table 3, p. 576–585), includes the determination for silica (SiO_2). Silica was not determined in the partial analyses, hence, the sum of determined constituents for these analyses is not directly comparable with that given for the complete analyses.

TABLES OF CHEMICAL ANALYSES

387511—57——5

TABLE 2.—*Partial chemical analyses of water and descriptions of wells on the Mendota-Huron area, California*

[Samples collected by U. S. Geological Survey and California Division of Water Resources. Analyses chiefly by Quality of Water Branch, U. S. Geological Survey, in cooperation with Water Quality Section, California Division of Water Resources; analyses with sulfate determined by turbidity method were made by California Division of Water Resources. Items marked with dagger (†) show sum of determined constituents estimated from specific conductance; items marked with asterisk (*) show sulfate determined by turbidity method, approximate only]

PARTIAL ANALYSES OF WATER

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
12/11-13B1	7.4	1,750	†1,200	----------	----------	336 14.61	----------	162 2.66	*500 10.40	120 3.38	2.5	172	81
13D1	7.5	1,520	†1,000	----------	----------	286 12.44	----------	184 3.02	*450 9.36	84 2.37	2.5	156	80
13D2	7.5	1,590	†1,000	----------	----------	286 12.44	----------	192 3.15	*450 9.36	100 2.82	2.4	196	76
14A1	7.9	1,610	1,052	45 2.25	24 1.97	275 11.96	0	196 3.21	507 10.56	101 2.85	2.6	211	74
14N2	7.4	2,340	1,481	116 5.79	55 4.52	310 13.48	0	189 3.10	543 11.30	360 10.15	3.7	516	57
23R2	7.9	2,580	†1,700	----------	----------	336 14.61	----------	180 2.95	*450 9.36	532 15.00	4.2	628	54
24P1	7.5	2,080	†1,400	----------	----------	330 14.35	----------	210 3.44	*550 11.44	268 7.56	3.3	424	63
25Q1	7.3	2,570	1,649	127 6.34	58 4.77	365 15.87	0	196 3.21	583 12.14	415 11.70	3.9	556	59
12/12-10D1	7.4	2,320	†1,700	----------	----------	242 10.52	----------	180 2.95	*1,000 20.80	80 2.26	3.6	924	36
10E1	7.5	1,800	†1,700	----------	----------	253 11.00	----------	230 3.77	*550 11.44	92 2.59	2.9	464	54
10N1	7.5	1,900	†1,300	----------	----------	297 12.91	----------	242 3.97	*550 11.44	140 3.95	2.6	408	61

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*

DESCRIPTION OF WELLS

Depth: m, measured depth of wells furnished by other agencies.
Type of well: P, percussion or cable tool; R, rotary; G, gravel packed. For example R, G, 16 would indicate a drilled rotary gravel-packed well with 16-inch casing.
Depth to water level: p, pumping level.
Use: Dom, domestic; Ind, industrial; Irr, irrigation; PS, public supply; S, stock.
Point of sampling: B, building near well; D, discharge; P, pressure tank; S, standpipe. Numbers indicate distance from pump.
Collectors names abbreviated as follows: DWB, D. W. Brown; DWM, D. W. McNealy; MEC, M. E. Cooley; JMM, J. M. Morris; PRW, P. R. Wood; WB, William Back.

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
12/11-13B1	1892	Hugh Bennett	683	8					82	D	Irr	WB	14	Clear.
13D1	746	do		Dug					82	D	Irr	WB	13	Do.
13D2	2613	do	827	16	512	827	4-26-51	p 265.3	81	D	Irr	WB	13	Do.
14A1	2680	Re-Al Farms, 1	812	R, G, 14	481	812			80	D	Irr	WB	14	Do.
14N2	2046	Eagle Loma Farms, 4							79	D	Irr	WB	14	Do.
23R2	3116	Eagle Loma Farms							79	D	Irr	WB	13	Do.
24P1	2155	do	900	16					79	D	Irr	WB	13	Do.
25Q1	1736	D. A. Drew, 2	1,050	16	450	1,050	5- 1-51	p 367.4	79	D	Irr	WB	14	Do.
12/12-10D1	3062	L. C. George		G			4-26-51	p 55.93	71	D	Irr	WB	14	Do.
10E1	3092	do		R, G, 16			4-26-51	59.83	73	D	Irr	WB	14	Do.
10N1	1594	Mathis Bros		R, G, 18			4-26-51	74.70	75	D	Irr	WB	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
12/12-11M1	7.4	1,950	†1,400	----	----	204 8.87	----	180 2.95	*750 15.60	88 2.48	2.2	592	43
15N2	7.9	2,290	†1,500	----	----	478 20.79	----	216 3.54	*500 10.40	336 9.48	2.2	200	84
17E1	7.7	1,460	†970	----	----	292 12.70	----	324 5.31	*350 7.28	72 2.03	2.4	92	87
17N1	7.5	2,130	†1,400	----	----	495 21.52	----	170 2.79	*500 10.40	214 6.03	2.2	200	84
18D1	7.8	2,010	†1,300	----	----	385 16.74	----	158 2.59	*550 11.44	196 5.53	2.4	172	83
19E1	7.8	1,390	†920	----	----	242 10.52	----	218 3.58	*400 8.32	84 2.37	2.4	180	75
20N1	7.2	1,460	†970	----	----	248 10.78	----	202 3.31	*400 8.32	76 2.14	1.9	150	78
21E1	7.6	2,130	†1,400	----	----	440 19.13	----	176 2.89	*600 12.48	180 5.08	2.9	180	84
25N1	7.6	2,860	†1,800	----	----	627 27.26	----	192 3.15	*500 10.40	504 14.21	2.6	200	87
31M1	7.3	2,470	1,641	102 5.09	51 4.19	385 16.74	0	213 3.49	713 14.84	280 7.90	3.6	464	64
31N1	7.1	2,710	1,729	124 6.19	68 5.59	365 15.87	0	202 3.31	663 13.80	405 11.42	4.2	589	57
34N1	7.5	2,190	1,490	34 1.70	17 1.40	445 19.35	0	184 3.02	622 12.95	207 5.84	3.4	155	86
34P1	7.4	2,160	1,434	50 2.50	15 1.23	415 18.05	0	164 2.69	729 15.18	141 3.98	2.8	186	83
12/13-32A1	7.2	2,780	†2,100	----	----	286 12.44	----	122 2.00	*1,400 29.12	116 3.27	3.0	1,270	33

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
12/12-11M1	3187	L. C. George		R, G, 16			4-26-51	53.57	72	D	Irr	WB	14	Clear.
15N2	159	L. C. George, 2	1,220	16	400	1,220	8- 7-51	209.7	81	D	Irr	WB	14	Do.
17E1	759	Hugh Bennett		12						D	Dom	WB	14	Do.
17N1	145	J. Depavo	825	10					84	D	Irr	WB	14	Do.
18D1	2810	Hugh Bennett	812	16	500	812			82	D	Irr	WB	14	Do.
19N1	3091	Paul Hanson	965	R, G, 16	441	965			81	D	Irr	WB	13	Do.
20N1	1498	Lyon and Hoag, 7	m 800						83	D	Irr	WB	13	Do.
21E1	2065	8	931	R, 10	820	931			85	D	Irr	WB	14	Do.
25N1	696	4	1,199	16	355	1,131			85	D	Irr	WB	13	Do.
31M1	3080	D. A. Drew, 3	970	R, G, 16	449	970	5- 1-51	p 357.3	79	D	Irr	WB	14	Do.
31N1	1475	1	m 800	16	480				78	D	Irr	WB	14	Do.
34N1	848	Lyon and Hoag, 5	1,176	16	320	1,152	5- 1-51	p 303.0	86	D	Irr	WB	14	Do.
34P1	4013	10		R					85	D	Irr	WB	14	Do.
12/13-32A1	606	San Joaquin Cotton Oil Co		12						200 ft	Ind	WB	13	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
12/13-33N1	7.3	1,547	†1,000	----------	----------	204 8.87	----------	218 3.58	*600 12.48	60 1.69	1.6	436	50
33Q1	7.4	1,673	†1,200	----------	----------	204 8.87	----------	212 3.48	*750 15.60	84 2.37	2.2	548	45
34P1	8.2	1,896	†1,300	----------	----------	264 11.48	----------	226 3.71	*550 11.44	220 6.20	1.5	496	54
13/12-2D1	7.4	2,350	1,493	42 2.10	11 0.90	440 19.13	0	158 2.59	698 14.53	222 6.26	2.1	150	86
2F1	8.2	2,400	1,590	72 3.59	18 1.48	445 19.35	0	180 2.95	749 15.59	215 6.06	2.4	254	79
4N1	7.7	1,170	776	29 1.45	11 0.90	215 9.35	0	220 3.61	359 7.47	52 1.47	1.6	118	80
5D1	7.5	1,620	1,053	44 2.20	28 2.30	275 11.96	0	192 3.15	525 10.93	84 2.37	2.4	225	73
5N1	7.3	2,690	1,170	98 4.89	62 5.10	415 18.05	0	218 3.57	742 15.45	342 9.65	4.2	500	64
5P1	7.1	1,700	1,088	50 2.50	29 2.38	265 11.52	0	188 3.08	547 11.39	102 2.88	2.4	244	70
9M1	7.4	1,650	1,074	38 1.90	21 1.73	300 13.05	0	180 2.95	528 10.99	96 2.71	2.2	182	78
9R1	7.2	1,480	955	60 2.99	29 2.38	205 8.91	0	170 2.79	484 10.08	90 2.54	3.1	268	62
10N1	7.5	1,640	1,025	34 1.70	15 1.23	295 12.83	0	220 3.61	458 9.54	112 3.16	3.1	146	81
10R1	7.4	1,830	1,181	35 1.75	11 0.90	340 14.78	0	163 2.67	614 12.78	99 2.79	2.3	132	85
11R1	8.4	2,220	1,448	37 1.85	14 1.15	425 18.48	6.0 0.20	186 3.05	713 14.84	158 4.48	2.5	150	86

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
12/13-33N1	952	Mathis-Smith	1,218	16					75	D	Irr	DWB	16	Clear.
33Q1	2627	do	703	R, G, 16	308	703			75	D	Irr	DWB	16	Do.
34P1	840	Q. Chuck	800	16	300	800	5- 1-51	p 261.44	76	D	Irr	DWB	16	Do.
13/12-2D1	4008	Lyon and Hoag, 9							86	D	Irr	WB	14	Do.
2F1	1870	6	m 975		400	1,164	5- 1-51	p 291.15	83	S	Irr	WB	14	Do.
4N1	1155	Desert Ranch, 6	956	P			4-18-50	262.5	82	D	Irr	WB	14	Do.
5D1	3090	Pacific Farm Co		G			5- 1-51	310.6	82	D	Irr	WB	14	Do.
5N1	3002	Desert Ranch, 10	1,049	R, G, 16	485	1,049	5- 1-51	311.1	81	D	Irr	WB	14	Do.
5P1	1153	7	937		373	937			81	D	Irr	WB	14	Do.
9M1	3230	15							82	D	Irr	WB	14	Do.
9R1	1157	4	980	16						(1)	Dom	WB	14	Do.
10N1	3063	11	1,077	16	573	1,077	5- 1-51	294.42	82	D	Irr	WB	14	(1)
10R1	1158	3		18					85	D	Irr	WB	14	(1)
11R1	1159	2	1,154	18	330	1,050	5- 1-51	307.0	86	D	Irr	WB	14	(2)

See footnotes at end of table, page 167.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
13/12-13E1	7.5	2,320	1,529	26 1.30	9.8 0.81	485 21.09	0	200 3.28	744 15.49	162 4.57	3.2	106	91
13N1	8.0	2,310	1,525	57 2.84	39 3.21	388 16.87	0	232 3.80	782 16.28	142 4.00	3.3	3 2	74
22Q1	7.5	1,650	1,055	37 1.85	18 1.48	295 12.83	0	206 3.38	477 9.93	127 3.58	.6	166	79
24N1	8.0	1,670	1,048	26 1.30	9.8 0.81	310 13.48	0	204 3.34	519 10.81	80 2.26	2.8	106	86
26Q3	7.9	1,740	1,128	38 1.90	22 1.81	320 13.91	0	212 3.47	542 11.28	99 2.79	2.7	185	79
35N1	7.1	1,930	1,251	42 2.10	23 1.89	355 15.44	0	211 3.46	584 12.16	140 3.95	2.6	200	79
36D2	7.5	2,160	1,673	44 2.20	31 2.55	390 16.96	0	733 12.01	713 14.84	130 3.62	3.8	235	78
36M1	7.5	2,040	1,675	36 1.80	21 1.73	395 17.18	0	214 3.51	984 20.49	131 3.69	3.2	175	83
13/13-8N1	7.6	2,500	1,513	82 4.09	29 2.38	400 17.39	0	222 3.64	502 10.54	390 11.00	1.4	324	73
9E3	7.4	4,290	2,529	123 6.14	31 2.55	770 33.48	0	162 2.65	504 10.49	1,020 28.77	1.1	434	79
10R1	7.6	2,750	1,672	90 4.49	26 2.14	460 20.00	0	208 3.11	543 11.30	448 12.64	2.8	332	75
13N1	7.2	2,350	1,636	142 7.09	91 7.48	250 10.87	0	226 3.70	815 16.97	225 6.35	1.5	728	43
13P1	7.1	3,460	2,416	227 11.33	154 12.66	342 14.87	0	226 3.70	1,080 22.48	500 14.10	1.5	1,200	38
14N1	7.5	5,130	2,975	110 5.49	24 1.97	970 42.18	0	136 2.23	502 10.45	1,300 36.66	1.8	373	85

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
13/12-13E1	1746	Garin, 1	1,242	R, G, 16					88	D	Irr	WB	14	Clear.
13N1	3096	Hammonds Ranch Inc., 12	1,255	R, G, 16	500	1,255	5- 2-51	306.2	85	D	Irr	WB	14	Cloudy.
22Q1	3102	14	1,105	R, G, 16	602	1,090	5- 2-51	339.1	84	D	Irr	WB	14	Clear.
24N1	3081	11	1,080	R, G, 16	600	1,080	5- 2-51	354.9	88	D	Irr	WB	14	Do.
26Q3	1460	17	1,075	R, G, 16	571	1,075			86	D	Irr	WB	15	Do.
35N1	1695	7	1,083	16	500	1,060			84	D	Irr	WB	15	Do.
36D2	3161	Hotchkiss Estate, CF 11	1,303	R, G, 16	491	1,303	5- 2-51	375.3	88	D	Irr	WB	15	Do.
36M1	1327	9	1,305		495	1,305			88	D	Irr	WB	15	Do.
13/13-8N1	2102	James Roggero		18					81	D	Irr	WB	14	Do.
9E3	1504	Hotchkiss Estate, 38	1,206	R	545	1,206			86	D	Irr	WB	14	Do.
10R1	2244	47	1,265	R, G, 16	424	1,265	5- 1-51	p 318.1	82	D	Irr	WB	14	Do.
13N1	2679	Biancucci, W		16					75	D	Irr	WB	15	Do.
13P1	1448	Biancucci, C		18			5- 3-51	p 245.5		D	Irr	WB	15	Do.
14N1	1167	Hotchkiss Estate, 43	1,432	R, G, 16	497	1,432			88	D	Irr	WB	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
13/13-15M1	7.5	2,340	1,446	78 3.89	38 3.12	360 15.65	0	214 3.51	551 11.47	312 8.80	1.9	350	69
16D1	7.6	3,960	2,349	89 4.44	28 2.30	740 32.18	0	184 3.02	599 12.47	800 22.56	2.4	337	83
16E1	8.2	2,990	1,754	53 2.64	12 0.99	565 24.57	0	260 4.26	438 9.12	555 15.65	2.5	182	87
16N1	7.5	4,380	2,576	96 4.79	21 1.73	840 36.53	0	148 2.43	505 10.51	1,040 29.33	1.5	326	85
16R1	7.5	4,540	2,585	117 5.84	22 1.81	810 35.22	0	164 2.69	395 8.22	1,160 32.72	.7	382	82
20Q2	7.8	3,270	1,992	52 2.59	12 0.99	660 28.70	0	196 3.21	580 12.24	580 16.36	2.7	179	89
22N1	7.7	3,420	2,040	75 3.74	23 1.89	630 27.39	0	202 3.31	530 11.03	680 19.18	1.9	282	83
23N1	7.7	1,680	1,135	75 3.74	54 4.44	217 9.44	0	240 3.93	606 12.62	63 1.78	1.9	409	54
25N1	7.3	3,110	1,844	82 4.09	16 1.32	590 25.66	0	212 3.47	370 7.70	682 19.23	.8	270	83
26N2	7.7	3,620	2,143	87 4.34	25 2.06	660 28.70	0	193 3.16	490 10.20	785 22.14	1.0	320	82
27P1	7.4	4,540	2,687	105 5.24	20 1.64	870 37.83	0	168 2.75	507 10.56	1,100 31.02	1.7	345	85
30E1	7.9	2,220	1,430	22 1.10	9.1 0.75	445 19.35	0	206 3.38	718 14.95	132 3.72	3.4	92	91
30R1	7.6	2,140	1,392	33 1.65	17 1.40	425 18.48	0	218 3.57	669 13.91	139 3.92	3.2	150	86
31N1	7.3	1,980	1,335	69 3.44	43 3.54	305 13.26	0	188 3.08	716 14.91	107 3.02	2.4	349	66

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
13/13-15M1	1164	Hotchkiss Estate, 35	1,490	R, G, 16	404	1,490	5- 3-51	p 301.0	79	D	Irr	WB	14	Cloudy.
16D1	1148	45	1,393	20	450	1,393	8- 7-51	p 371.4	87	D	Irr	WB	14	Clear.
16E1	1149	21		18					85	D	Irr	WB	14	Do.
16N1	1539	46	1,625	R, G, 16	495	1,625			87	D	Irr	WB	14	Do.
16R1	3051	Hotchkiss Estate	1,377		504	1,300			85	D	Irr	WB	14	Do.
20Q2	1308	Vista del Llano, New 2A		R, G, 16			12-19-50	308.3	89	D	Irr	WB	14	Do.
22N1	1287	4	1,354	16	429	1,354	8- 7-51	p 373.9	86	D	Irr	WB	14	Do.
23N1	1866	16		16	456	1,575	5- 3-51	230.5	77	D	Irr	WB	14	Do.
25N1	3183	Hotchkiss Estate, 49	1,220	18	504	1,220			82	D	Irr	WB	15	Do.
26N2	2290	41	1,250	16	380	1,250	5-19-50	p 334.3	85	D	Irr	WB	15	Do.
27P1	2682	Vista del Llano, 5	1,553	16	501	1,553	5- 3-51	319.1	87	D	Irr	WB	15	Do.
30E1	1328	Hotchkiss Estate, CF 7	1,306	16	320	1,306	5- 3-51	p 317.4	89	D	Irr	WB	14	Do.
30R1	1301	Cheek and Hotchkiss, 3 C	1,277	R, G, 16	599	1,277	5- 3-51	353.9	87	D	Irr	WB	15	Do.
31N1	1348	2 C		16			5- 3-51	385.2	85	D	Irr	WB	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
13/13-32N2	7.6	1,870	1,220	43 2.15	32 2.63	305 13.26	0	221 3.62	630 13.12	99 2.79	1.9	239	74
33N2	7.8	2,160	1,426	34 1.70	8.7 0.72	435 18.92	0	261 4.28	626 13.03	191 5.39	1.9	120	89
34N1	7.5	2,250	1,611	133 6.64	109 8.96	245 10.65	0	219 3.59	896 18.65	118 3.33	1.8	780	41
34P1	7.4	3,920	2,352	58 2.89	14 1.15	790 34.35	0	198 3.24	524 10.91	865 24.40	2.8	200	89
35P1	7.3	3,940	2,338	85 4.24	18 1.48	730 31.74	0	167 2.74	522 10.87	900 25.38	1.4	285	85
36P1	8.2	1,570	1,073	72 3.59	48 3.95	220 9.57	0	243 3.98	554 11.53	57 1.61	2.1	375	56
13/14-7N1	7.4	1,620	1,010	33 1.65	4.6 0.38	315 13.70	0	231 3.79	436 9.08	107 3.02	.7	102	87
15B1	7.4	2,230	1,573	29 1.45	6.8 0.56	430 18.70	0	646 10.59	528 10.99	260 7.33	1.0	100	90
17N1	7.3	1,820	1,163	34 1.70	6.1 0.50	350 15.22	0	216 3.54	525 10.93	141 3.98	1.3	110	87
18M1	7.0	4,170	2,421	121 6.04	21 1.73	750 32.61	0	171 2.80	415 8.64	1,030 29.05	.7	388	81
30N1	7.4	3,230	1,966	111 5.54	39 3.21	550 23.92	0	197 3.23	500 10.41	668 18.84	1.4	440	73
31N1	7.6	1,800	1,213	86 4.29	55 4.52	235 10.22	0	236 3.87	634 13.20	85 2.40	1.8	440	54
31Q1	8.0	3,080	2,187	212 10.58	129 10.61	330 14.35	0	227 3.72	1,030 21.44	372 10.49	1.7	1,060	40
33N1	7.3	4.440	2,543	144 7.19	51 4.19	700 30.44	0	179 2.93	589 12.26	970 27.36	1.0	570	73

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
13/13-32N2	2428	Hotchkiss Estate, 44	1,338	R, G	549	1,338			87	D	Irr	WB	15	Clear.
33N2	3110	Cheek and Hotchkiss, 1 A	1,256	R, G, 16	613	1,250			89	D	Irr	WB	15	Do.
34N1	1896	Vista del Llano, 9	1,533	16	413	1,533	5- 3-51	306.7	79	D	Irr	WB	15	Cloudy.
34P1	2642	3		16			8- 7-51	p 423.8	92	D	Irr	WB	15	Clear.
35P1	3237	Murphy		16					89	D	Irr	WB	15	Do.
36P1	2018	Murphy, 3		16						S	Irr	WB	15	Do.
13/14-7N1	2253	V. Johnson	825	R, G, 16	507	825	4-27-51	p 244.84		D	Irr	WB	15	Do.
15B1		Las Deltas Mutual Water Co.	603		20	121				D	Ind	WB	15	Cloudy.
17N1	2120	Reece and Schuh	987	16			5-18-50	p 256.9		D	Irr	WB	15	Clear.
18M1	1888	Biancucci		R, G, 16						D	Irr	WB	15	Do.
30N1	1210	Vista del Llano, 15	1,441	16	402	1,441			80	D	Irr	WB	15	Do.
31N1	1753	14	1,381	16	442	1,381	5-19-50	p 321.9	78	D	Irr	WB	15	Do.
31Q1	1991	20	1,472	16	441	1,472			75	D	Irr	WB	15	Do.
33N1	2206	18	1,420	R, G, 16	470	1,420	5- 5-51	219.2	80	D	Irr	WB	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
13/14-35Q1	7.4	4,870	2,719	89 4.44	20 1.64	850 36.96	0	169 2.77	516 10.74	1,160 32.72	1.2	305	86
14/12-2N1	8.0	3,280	1,965	61 3.04	36 2.96	600 26.09	0	250 4.10	499 10.39	640 18.05	5.7	300	81
3Q1	7.1	4,410	2,745	141 7.04	93 7.65	700 30.44	0	205 3.36	780 16.24	925 26.09	5.2	734	67
11E1	7.4	3,250	1,934	59 2.94	42 3.45	590 25.66	0	256 4.20	459 9.56	652 18.39	5.6	320	80
11F1	7.2	2,550	1,670	59 2.94	45 3.70	445 19.35	0	211 3.46	741 15.43	272 7.67	4.4	332	74
12N1	7.5	2,310	1,492	52 2.59	23 1.89	425 18.48	0	220 3.61	648 13.49	232 6.54	4.1	224	80
13N1	7.5	2,100	1,539	64 3.19	42 3.45	389 16.92	0	220 3.61	742 15.45	190 5.36	4.1	332	72
23P1	7.5	3,450	2,347	102 5.09	80 6.58	585 25.44	0	302 4.95	1,020 21.24	405 11.42	6.2	584	69
24N1	8.6	1,790	1,199	52 2.59	32 2.63	305 13.26	16 0.53	190 3.11	616 12.82	80 2.26	4.2	261	72
25E1	7.6	2,410	1,606	54 2.69	43 2.54	450 19.57	0	240 3.93	668 13.91	268 7.56	4.9	312	76
25Q1	7.6	1,880	1,238	47 2.35	15 1.23	342 14.87	0	204 3.34	639 13.30	92 2.59	2.8	179	81
36M1	7.4	2,190	1,515	60 2.99	45 3.70	371 16.13	0	228 3.74	782 16.28	142 4.00	3.2	334	71
36Q1	7.5	2,090	1,426	54 2.69	28 2.30	371 16.13	0	188 3.08	762 15.86	115 3.24	2.5	250	76
14/13-1N1	7.3	2,750	1,612	49 2.45	14 1.15	500 21.74	0	193 3.16	435 9.06	518 14.61	1.2	180	86

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
13/14-35Q1	1193	T. C. McCabe, 2	1,100						82	D	Irr	WB	15	Clear.
14/12-2N1	2377	R. Clark, 3	1,440	16	500	1,440			85	D	Irr	WB	15	Do.
3Q1	2476	E. Chounet	1,146	16	480	1,146	5- 2-51	p 483.1	84	D	Irr	WB	15	Do.
11E1	2249	R. Clark, 2	1,440	16	300	1,440	5- 2-51	445.2	84	D	Irr	WB	15	Do.
11F1	2690	4	1,700	R, G, 16	682	1,700			85	D	Irr	WB	15	Do.
12N1	2332	Employees Enterprises, 3	1,709	16	555	1,709	5- 2-51	451.1	84	D	Irr	WB	15	Do.
13N1	2337	7	1,735	16	600	1,735			85	D	Irr	WB	16	Do.
23P1	2483	19	1,761	16	644	1,761	5- 3-51	p 521.7	83	D	Irr	WB	16	Do.
24N1	2335	4	1,670	16	558	1,670			86	D	Irr	WB	16	Do.
25E1	2474	17	1,800	16	651	1,800			87	D	Irr	WB	16	Do.
25Q1	2538	21	1,773	16	666	1,773				D	Irr	WB	16	Do.
36M1	2508	20	1,798	16	639	1,798	5- 3-51	533.4	80	D	Irr	WB	16	Do.
36Q1	2502	22	1,816	16	511	1,816			87	D	Irr	WB	16	Do.
14/13-1N1	1669	H. B. Murphy, 1		16			8- 7-51	p 418	88	D	Irr	WB	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
14/13-3N1	7.4	2,100	1,605	127 6.34	130 10.69	200 8.70	0	186 3.05	942 19.61	112 3.16	1.7	852	34
4N1	7.5	2,290	1,384	85 4.24	80 6.58	305 13.26	0	222 3.64	852 17.74	150 4.23	2.5	541	55
4P1	8.3	2,220	1,546	24 1.20	7.0 0.58	515 22.39	0	213 3.57	682 14.20	208 5.87	2.9	89	93
7E1	7.6	1,810	1,181	25 1.25	13 1.07	365 15.87	0	218 3.57	574 11.95	94 2.65	2.6	116	87
7N1	7.5	1,900	1,278	58 2.89	32 2.63	320 13.91	0	203 3.33	667 13.89	98 2.76	2.7	276	72
8N1	7.4	1,880	1,236	35 1.75	19 1.56	365 15.87	0	219 3.59	607 12.64	99 2.79	3.1	166	83
11R1	7.3	2,700	1,668	49 2.45	17 1.40	515 22.39	0	168 2.75	565 11.76	438 12.35	1.4	192	85
12N1	7.4	1,110	678	19 0.95	5.8 0.48	210 9.13	0	268 4.39	268 5.58	43 1.21	.8	72	86
13E1	7.3	2,400	1,538	52 2.59	29 2.38	435 18.92	0	184 3.02	612 12.74	318 8.97	1.4	248	79
15M1	7.4	1,830	1,264	26 1.30	9.0 0.74	392 17.05	0	168 2.75	642 13.37	110 3.10	1.8	102	89
16N1	7.7	2,050	1,437	36 1.80	28 2.30	396 17.22	0	220 3.61	746 15.53	120 3.38	3.1	205	81
18N1	7.4	1,800	1,185	37 1.85	19 1.56	340 14.78	0	192 3.15	601 12.51	90 2.54	2.9	170	81
19N1	7.3	2,000	1,378	66 3.29	48 3.95	330 14.35	0	201 3.29	734 15.28	99 2.79	2.4	362	66
19Q1	7.5	1,980	1,339	64 3.19	43 3.54	320 13.91	0	195 3.20	716 14.91	97 2.74	2.6	336	67

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
14/13-3N1	1771	Employees Enterprises, VdL 7.	1,586	14	455	1,586			77	D	Irr	WB	16	Clear.
4N1	1966	Employees Enterprises, VdL 8.	1,665		448	1,665			86	D	Irr	WB	16	Do.
4P1	3060	Employees Enterprises, 28		R, G, 16					92	D	Irr	WB	15	Do.
7E1	2248	R. Clark, 1	1,440	16	500	1,440			88	D	Irr	WB	15	Do.
7N1	2338	Employees Enterprises, 5	1,753	16	558	1,753			86	D	Irr	WB	15	Do.
8N1	2350	8	1,671	16	600	1,671	5- 3-51	p 451.4	89	D	Irr	WB	15	Do.
11R1	3281	Pappas and Co., 7							89	D	Irr	WB	15	Do.
12N1	2712	6	1,450	R, G, 16	599	1,450	5- 3-51	353.9	84	D	Irr	WB	15	Do.
13E1	2371	5	1,486	16			8- 7 51	435.7	88	D	Irr	WB	15	Do.
15M1	2358	Employees Enterprises, 10	1,594	18	600	1,594			89	D	Irr	WB	16	Do.
16N1	2422	16	1,766	16	585	1,766			91	D	Irr	WB	16	Do.
18N1	2355	9	1,819	16	594	1,819			88	D	Irr	WB	15	Do.
19N1	2353	Employees Enterprises, Johnson 1.	1,448	16	536	1,448			85	D	Irr	WB	15	Do.
19Q1	2617	Employees Enterprises, Johnson 2.		16					87	D	Irr	WB	15	Do.

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TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
14/13-21N1	7.8	2,170	1,512	72 3.59	57 4.67	355 15.44	0	225 3.69	797 16.59	117 3.30	3.2	414	65
22N1	7.4	1,840	1,233	29 1.45	14 1.15	365 15.87	0	181 2.97	624 12.99	110 3.10	2.3	130	86
24N1	7.3	1,760	1,169	44 2.20	31 2.55	300 13.05	0	203 3.33	596 12.41	96 2.71	1.6	238	73
25M1	7.2	1,930	1,330	67 3.34	53 4.36	280 12.18	0	188 3.08	739 15.39	96 2.71	1.7	385	61
25N1	7.3	1,990	1,287	34 1.70	13 1.07	375 16.31	0	172 2.82	637 13.26	141 3.98	1.6	138	85
26D1	7.4	1,950	1,296	29 1.45	14 1.15	405 17.61	0	183 3.00	634 13.20	122 3.44	2.1	130	87
26E1	7.3	1,100	686	23 1.15	14 1.15	195 8.48	0	229 3.75	300 6.25	40 1.13	1.4	115	79
26M1	7.4	2,170	1,437	34 1.70	17 1.40	425 18.48	0	156 2.56	749 15.59	132 3.72	2.5	155	86
26N1	7.3	1,830	1,478	84 4.19	65 5.35	235 10.22	0	186 3.05	696 14.49	304 8.57	2.2	477	52
28P1	7.5	2,250	1,663	99 4.94	102 8.39	292 12.70	0	204 3.34	963 20.05	105 2.96	2.2	666	49
29N1	7.6	1,570	1,044	33 1.65	15 1.23	300 13.05	0	184 3.02	528 10.99	75 2.12	2.1	144	82
29Q1	7.6	2,160	1,412	19 0.95	4.9 0.40	460 20.00	0	254 4.16	667 13.89	132 3.72	3.6	68	94
30N1	7.6	1,920	1,264	42 2.10	24 1.97	342 14.87	0	204 3.34	658 13.70	95 2.68	2.6	204	79
30Q1	7.3	1,740	1,218	57 2.84	44 3.62	285 12.39	0	198 3.24	652 13.57	80 2.26	2.3	323	66

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
14/13-21N1	2326	Employees Enterprises, 2	1,889		630	1,889			88	D	Irr	WB	15	Cloudy.
22N1	2327	Employees Enterprises, 1	1,710	16	524	1,710			90	D	Irr	WB	15	Clear.
24N1	2293	Pilibos Bros., 8	1,408	R, G, 16	550	1,408			87	D	Irr	WB	15	Do.
25M1	2051	1		R, G, 16			8- 7-51	p 466.7	86	D	Irr	WB	15	Do.
25N1	3107	7	1,687	R, G, 16	785	1,685	5- 3-51	420.1	89	D	Irr	WB	15	Do.
26D1	4006	C. L. Caine	1,500	R, G, 16					90	D	Irr	WB	15	Do.
26E1	2482	C. L. Caine, 1		R, G, 16					86	D	Irr	WB	15	Do.
26M1	3294	Pilibos Bros., 9	1,508	R, G, 16	830	1,508			92	D	Irr	WB	15	Do.
26N1	2222	2	1,410	R, G, 16						D	Irr	WB	15	Do.
28P1	2473	Employees Enterprises, 18	1,789	R, G, 16	601	1,789			86	D	Irr	WB	16	Do.
29N1	2430	Employees Enterprises, Jergins 1.	1,676	R, G, 16	595	1,676			91	D	Irr	WB	16	Do.
29Q1	2400	Employees Enterprises, 13	1,803	16	621	1,803			95	D	Irr	WB	16	Do.
30N1	2399	14	1,766	16	600	1,766			87	D	Irr	WB	16	Do.
30Q1	2401	15	1,800	R, G, 16	600	1,800			88	D	Irr	WB	16	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
14/13-35E1	7.3	2,160	1,403	36 1.80	18 1.48	392 17.05	0	160 2.62	746 15.53	130 3.67	1.8	164	84
35N1	7.0	1,960	1,316	57 2.84	40 3.29	300 13.05	0	160 2.62	742 15.45	96 2.71	2.1	306	68
36N1	7.1	1,720	1,154	57 2.84	45 3.70	245 10.65	0	185 3.03	637 13.26	77 2.17	1.8	327	62
14/14-1E1	7.3	4,400	†2,600			830 36.09		228 3.74	*123 2.56	1,560 44.00	1.6	770	70
1Q1	7.9	1,830	†1,200			435 18.92		172 2.82	*500 10.40	240 6.77	1.6	80	92
2G1	7.6	1,365	†900			295 12.83		194 3.18	*450 9.36	90 2.54	1.2	130	83
3N1	7.4	2,840	†1,800			445 19.35		214 3.15	*1,000 20.80	460 12.97	1.3	740	57
4N1	7.5	5,260	†3,000			810 35.22		260 4.26	*1,600 33.28	1,130 31.87	2.3	1,600	52
5E1	7.9	3,240	†2,000			385 16.74		214 3.51	*1,150 23.92	550 15.51	1.4	1,130	43
5H1	7.6	2,890	†1,800			340 14.78		194 3.18	*1,350 28.08	390 11.00	1.6	1,190	38
5N1	7.7	2,020	†1,300			415 18.05		206 3.38	*410 8.53	340 9.59	1.1	230	80
7M1	7.7	2,100	†1,400			445 19.35		210 3.44	*470 9.78	330 9.31	1.5	146	87
7P1	7.8	3,050	†1,900			660 28.70		206 3.38	*500 10.40	730 20.59	1.3	220	87
8N1	7.6	4,230	†2,500			870 37.83		126 2.07	*480 9.98	1,230 34.69	1.2	330	85

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
14/13-35E1	2678	Pilibos Bros., 5	1,652	R, G	740	1,652			93	D	Irr	WB	15	Clear
35N1	2536	4		16					90	D	Irr	WB	15	Do.
36N1	2328	3	1,410	16	542	1,410			87	D	Irr	WB	15	Do.
14/14-1E1	1190	Pete Prandini		R, G, 16			8- 7-51	p 187.4	74	D	Irr	DWB	13	Do.
1Q1	1191	R. Allen	750	R, 16			8- 7-51	p 184	78	D	Irr	DWB	13	Do.
2G1	1104	Murry		12			4-24-51	180.0		P	Dom	DWB	13	Do.
3N1	1187	Vista del Llano, Y-N	m 960	16	418	1,237	8- 7-51	p 281.45	76	D	Irr	DWB	13	Do.
4N1	1401	Pappas and Co., 1		16					74	D	Irr	DWB	13	Do.
5E1	2106	Vista del Llano, 13		16					75	D	Irr	DWB	13	Do.
5H1	1914	12		R, G, 16					73	D	Irr	DWB	13	Do.
5N1	1088	V-2		16			7-19-50	p 250.0	83	D	Irr	DWB	13	Do.
7M1	2937	W-2	1,640	R, G, 16	600	1,640			87	D	Irr	DWB	13	Do.
7P1	1176	W-1		R, G, 16	340		4-23-51	p 363.6	91	D	Irr	DWB	13	Do.
8N1	1562	V-1		R, G, 10			2-26-51	p 162.4	91	D	Irr	DWB	13	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
14/14-10N1	7.7	2,490	†1,600	----	----	490 21.31	----	186 3.05	*580 12.06	470 13.25	2.5	188	85
12M1	7.6	2,545	†1,600	----	----	530 23.05	----	168 2.76	*670 13.94	436 12.30	2.6	190	86
12N1	7.5	1,790	†1,200	----	----	385 16.74	----	174 2.85	*590 12.27	178 5.02	1.9	78	91
12N2	7.3	4,150	†2,500	----	----	700 30.44	----	214 3.51	*720 14.98	1,046 29.50	1.6	660	70
14G1	7.5	6,230	†6,230	----	----	1,090 47.40	----	256 4.20	*2,800 58.24	1,090 30.74	3.8	1,750	58
15N1	7.7	1,495	†1,000	----	----	295 12.83	----	202 3.31	*450 9.36	100 2.82	2.3	148	81
17Q1	7.7	1,800	†1,200	----	----	295 12.83	----	222 3.64	*620 12.90	150 4.23	2.0	380	63
18N1	7.5	1,990	†1,300	----	----	365 15.87	----	200 3.28	*610 12.69	250 7.05	2.2	350	69
20D1	7.6	1,995	†1,400	----	----	245 10.65	----	198 3.25	*900 18.72	120 3.38	1.9	650	45
20N1	7.9	1,445	†960	----	----	245 10.65	----	230 3.77	*520 10.82	70 1.97	1.9	250	68
21B1	7.5	2,710	†1,700	----	----	330 14.35	----	244 4.00	*1,000 20.80	360 9.87	1.7	926	44
21E1	7.9	1,425	†950	----	----	215 9.35	----	218 3.58	*470 9.78	80 2.26	2.0	286	62
21K1	7.3	2,195	†1,400	----	----	265 11.52	----	252 4.13	*1,100 22.88	246 6.94	2.6	506	53
22N1	7.2	2,545	†1,600	----	----	275 11.96	----	206 3.38	*1,300 27.04	242 6.82	2.3	1,050	36

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
14/14-10N1	1188	Pappas and Co., 2	1,463	16	540	1,463			83	S	Irr	DWB	13	Clear.
12M1	3273	Jack Scanes							80	D	Irr	DWB	13	Do.
12N1	1102	do	900	16	520	900			78	D	Irr	DWB	13	Do.
12N2	3085	do	920	16	480	920	8- 7-51	p 209.4	79	D	Irr	DWB	13	Do.
14G1	2542	L. H. Christopher, 2	m 952	R, G, 16			4-24-51	p 202.2	73	S	Irr	DWB	13	Do.
15N1	1118	Ensher and Alexander, 1		12					81	D	Irr	DWB	13	Do.
17Q1	1982	Wm. Giacone, 1	m 850	R, G	520	1,230			80	D	Irr	DWB	13	Do.
18N1	2124	Pappas and Co., 3	1,435	R, G, 16	500	1,435			84	D	Irr	DWB	13	Do.
20D1	2114	Frank Coit, 2 A	1,261	R, G, 18	477	1,261			80	D	Irr	DWB	13	Do.
20N1	2448	3 A	1,352	16	563	1,352	8- 7-51	p 408.3	82	D	Irr	DWB	13	Do.
21B1	2368	Ensher and Alexander, 4	1,252	R, G, 16					76	D	Irr	DWB	13	Do.
21E1	1180	Stamoules and Co., 1		16					86	S	Irr	DWB	13	Do.
21K1	2376	Ensher and Alexander, 5	1,246	R, G, 16					76	D	Irr	DWB	14	Do.
22N1	1206	Murietta Farms, 16	1,200	R, 12	361	1,200			75	D	Irr	DWB	14	Clear.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
14/14-24N1	7.8	1,472	†990	----------	----------	310 13.48	----------	188 3.08	*560 11.65	90 2.54	2.8	130	84
28E1	7.3	2,285	†1,700	----------	----------	222 9.65	----------	180 2.95	*1,400 29.12	130 3.67	2.3	1,036	32
28N1	7.6	1,350	†890	----------	----------	285 12.59	----------	228 3.73	*510 10.61	52 1.47	2.0	166	79
28R1	7.7	1,840	†1,300	----------	----------	340 14.78	----------	190 3.12	*460 9.57	160 4.51	1.8	70	91
29Q1	7.8	2,280	†1,500	----------	----------	490 21.31	----------	160 2.62	*670 13.94	318 8.97	2.0	110	91
30E1	7.6	1,310	†850	----------	----------	220 9.57	----------	224 3.67	*480 9.98	54 1.52	2.0	198	71
30N1	7.3	2,310	†1,700	----------	----------	255 11.09	----------	182 2.98	*1,400 29.12	136 3.84	2.4	990	36
31G1	7.5	1,450	†960	----------	----------	275 11.96	----------	192 3.15	*600 12.48	72 2.03	1.6	170	78
32E1	7.4	1,690	†1,200	----------	----------	340 14.78	----------	180 2.95	*670 13.94	94 2.65	2.0	138	84
33J1	7.6	1,590	†1,100	----------	----------	245 10.65	----------	244 4.00	*480 9.98	50 1.41	2.0	170	76
33Q1	7.8	1,630	†1,100	----------	----------	275 11.96	----------	188 3.08	*540 11.23	70 1.97	2.1	210	74
14/15-18E2	7.8	1,898	†1,300	----------	----------	405 17.61	----------	176 2.89	*570 11.86	226 6.37	3.5	92	91
28L1	7.2	1,380	†910	----------	----------	275 11.96	----------	186 3.05	*460 9.57	60 1.69	1.9	190	76

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
14/14-24N1	1924	Gibbs, 1							78	D	Irr	DWB	14	Do.
28E1	1716	Murietta Farms, 2	m 1,195	16	488	bottom			76	D	Irr	DWB	14	Do.
28N1	1200	3	1,505	R, G, 16	605	1,505	4-23-51	333.9	81	D	Irr	DWB	14	Do.
28R1	2793	15	1,475	R, G, 16	602	1,475	4-23-51	p 348.7	84	D	Irr	DWB	14	Do.
29Q1	2763	SW-29	1,681	R, G, 16	606	1,681	7-26-50	p 369.4	89	D	Irr	DWB	14	Do.
30E1	2393	Stamoules and Co., 2		R, G, 12					83	D	Irr	DWB	14	Do.
30N1	1931	3		R, G, 16					78	S	Irr	DWB	14	Do.
31G1	1519	Frank Coit, 4	1,320	16	416	1,320	7-26-50	p 416.8	86	D	Irr	DWB	14	Cloudy.
32E1	3152	4 A		R, G, 16					86	D	Irr	DWB	14	Clear.
33J1	2731	Murietta Farms, D-33	1,404	16	504	1,404			80	D	Irr	DWB	14	Do.
33Q1	2453	1	1,348	16	554	1,348	4-23-51	p 305.0	83	D	Irr	DWB	14	Do.
14/15-18E2	3162	Silveria Bros., 3	890	R, G, 16	525	888	4-24-51	p 167.5	79	D	Irr	DWB	13	Do.
28L1	1730	Sachs		14			4-26-51	127.2		P	Dom	DWB	15	Milky, cleared in 5 minutes.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
14/15-30M1	7.7	1,790	†1,200	----------	----------	375 16.31	----------	178 2.92	*640 13.31	160 4.51	2.2	76	91
31M1	7.2	3,520	†2,200	----------	----------	430 18.70	----------	220 3.60	*800 16.64	480 13.54	1.4	700	57
31N1	7.3	5,700	†5,700	----------	----------	590 25.66	----------	234 3.84	*1,600 33.28	600 16.92	1.6	1,320	64
15/12-1E1	7.4	2,926	†1,800	----------	----------	594 25.83	----------	218 3.58	*1,210 25.17	205 5.78	3.4	345	79
1N1	7.2	3,785	†2,300	----------	----------	737 32.05	----------	226 3.71	*1,760 36.61	305 8.60	5.1	545	75
12E1	7.4	9,078	†4,800	----------	----------	2,270 98.71	----------	594 9.74	*5,240 108.99	1,405 39.62	15.0	1,195	80
12Q1	7.2	2,950	†1,900	----------	----------	627 27.26	----------	196 3.21	*130 27.46	205 5.78	3.6	375	78
15A1	7.6	3,944	†2,400	----------	----------	550 23.92	----------	260 4.26	*1,300 27.04	225 6.35	5.5	1,760	40
15/13-1N1	7.8	1,740	†1,200	----------	----------	350 15.22	----------	164 2.69	*560 11.65	95 2.68	1.9	195	80
2N1	7.6	1,740	†1,200	----------	----------	285 12.39	----------	160 2.62	*690 14.35	85 2.40	1.8	210	67
3N1	7.8	1,902	†1,300	----------	----------	324 14.09	----------	180 2.95	*800 16.64	110 3.10	2.7	345	67
4E1	7.8	2,120	†1,500	----------	----------	330 14.35	----------	230 3.77	*870 18.10	115 3.24	3.3	455	61
5D1	7.7	1,536	†1,000	----------	----------	314 13.65	----------	188 3.08	*500 10.40	130 3.67	2.4	75	90
5M1	7.7	2,089	†1,500	----------	----------	352 15.31	----------	222 3.64	*830 17.26	100 2.82	3.4	360	68

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
14/15-30M1	1194	L. A. and J. W. Jones	1,260	R, G, 16	670	1,260	4-27-51	p 226.1	81	D	Irr	DWB	14	Sediment.
31M1	1109	do		16					75	D	Irr	DWB	14	Clear.
31N1	2493	L. A. and J. W. Jones	1,200	R, G	300	1,200	4-27-51	p 147.2	74	D	Irr	DWB	14	Do.
15/12-1E1	2509	Employees Enterprises, M-8	1,819	R, G, 16	650	1,819			83	D	Irr	DWB	15	Do.
1N1	2492	M-5	1,873	R, G, 16	639	1,873	8-22-50	p 565.2	83	D	Irr	DWB	15	Do.
12E1	3319	Employees Enterprises		R, G, 18					94	D	Irr	DWB	15	Do.
12Q1	2694	Employees Enterprises, 26	1,820	R, G, 16	708	1,820	8-18-50	p 609	90	D	Irr	DWB	15	Do.
15A1				12						(2)	Dom	DWB	15	Do.
15/13-1N1	2761	Pilibos Bros., 6	1,617	R, G, 16	720	1,617	4-23-51	p 472.5	90	D	Irr	DWB	15	Do.
2N1	2791	Mike Grammis	1,628	R, G, 16	716	1,628			90	D	Irr	DWB	15	Do.
3N1	2651	Employees Enterprises, 23	1,800	R, G, 16	631	1,800			92	D	Irr	DWB	15	Do.
4E1	2618	M-11	1,805	16	654	1,805			92	D	Irr	DWB	15	Do.
5D1	2205	M-3		16					94	D	Irr	DWB	15	Do.
5M1	2108	M-1	1,520	R, G, 16	522	1,520	4-23-51	p 538.6	92	D	Dom	DWB	15	Do.

See footnotes at end of table, p. 575.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
15/13-5N1	7.7	2,157	†1,500	----------	----------	462 20.01	----------	212 3.48	*780 16.22	125 3.53	3.4	120	89
5R1	8.0	1,363	†900	----------	----------	242 10.52	----------	184 3.02	*490 10.19	55 1.55	2.2	170	75
6N1	7.8	2,281	†1,700	----------	----------	506 22.00	----------	230 3.77	*510 10.61	140 3.95	3.6	110	91
8N1	7.6	2,797	†1,800	----------	----------	644 28.00	----------	242 3.97	*1,320 27.46	200 5.64	4.1	300	82
9E1	8.1	1,601	†1,100	----------	----------	297 12.91	----------	202 3.31	*600 12.48	90 2.54	2.7	240	73
12N1	7.6	1,830	†1,300	----------	----------	350 15.22	----------	172 2.82	*580 12.06	115 3.24	1.8	235	76
14N1	7.6	1,740	†1,200	----------	----------	285 12.39	----------	174 2.85	*640 13.31	85 2.40	2.2	300	67
15P1	7.9	1,370	†900	----------	----------	265 11.52	----------	172 2.82	*450 9.36	60 1.69	2.0	95	86
16N1	7.9	1,650	†1,100	----------	----------	----------	----------	198 3.24	*540 11.24	90 2.54	----------	135	----------
18N1	7.9	1,580	†1,100	----------	----------	----------	----------	182 2.98	*590 12.28	70 1.97	----------	85	----------
20E1	7.8	2,560	†1,900	----------	----------	----------	----------	224 3.67	*900 18.74	170 4.79	----------	115	----------
26J1	7.8	1,300	†850	----------	----------	255 11.09	----------	138 2.26	*540 9.36	45 1.27	2.4	130	81
26K1	7.9	1,390	†890	----------	----------	255 11.09	----------	136 2.23	*560 11.65	45 1.27	1.9	160	78
36M1	8.0	1,370	†900	----------	----------	255 11.09	----------	170 2.79	*520 10.82	40 1.13	2.3	145	79

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
15/13-5N1	2109	Employees Enterprises, M-2	1,544	16	548	1,544	4-23-51	534.8	93	D	Irr	DWB	15	Clear.
5R1	2209	M-4	1,528	R, G, 16	591	1,528	4-23-51	527.8	94	D	Irr	DWB	15	Do.
6N1	2487	M-7	1,704	R, G, 16	520	1,704			92	D	Irr	DWB	15	Do.
8N1	2492	M-6	1,798	R, G, 16	639	1,798	8- 6-51	p 609.9	98	D	Irr	DWB	15	Do.
9E1	2533	M-10	1,800	16	660	1,800			96	D	Irr	DWB	15	Do.
12N1	2652	24	1,837	R, G, 16	649	1,837			92	D	Irr	DWB	15	Do.
14N1	2689	25	1,811	R, G, 16	599	1,811			93	¼ mi	Irr	DWB	15	Do.
15P1	3181	David Freedman and Co., 4		R, G, 16					98	D	Irr	DWB	15	Do.
16N1	2705	1	1,911	16	696	1,911			99	D	Irr	DWB	15	Do.
18N1	4009	David Freedman, Ginsburg & Co.	2,048	R, G, 18					91	D	Irr	DWB	15	Do.
20E1	2714	David Freedman & Co., 2	1,980	R, G, 16	751	1,980			99	D	Irr	DWB	15	Do.
26J1	2696	Price Giffen, 8	1,864	R, G, 16	698	1,864			97	D	Irr	DWB	14	Do.
26K1	3160	9		R, G, 16			4-26-51	562.3	95	D	Irr	DWB	14	Do.
36M1	2697	7	1,900	R, G, 16						150 ft	Irr	DWB	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
15/13-36N1	7.8	1,320	†870			255 11.09		172 2.82	*560 11.65	40 1.13	1.8	135	80
36P2	7.8	1,480	†990			265 11.52		138 2.26	*670 13.94	45 1.27	2.1	205	74
15/14-1D1	7.5	1,200	†770			175 7.61		306 5.02	*300 6.24	50 1.41	1.5	210	64
4D1	7.6	1,590	†1,100			230 10.00		212 3.48	*530 11.02	60 1.69	2.0	250	67
4J1	7.5	1,260	†820			235 10.22		218 3.58	*440 9.15	50 1.41	2.1	200	72
4M1	7.5	1,780	†1,200			340 14.78		164 2.70	*610 12.69	90 2.54	2.0	120	86
6D1	7.7	1,470	†980			295 12.83		172 2.82	*560 11.65	78 2.20	1.6	62	91
6H1	7.6	1,540	†1,000			205 8.91		186 3.05	*590 12.27	50 1.41	2.4	250	64
6N1	7.5	1,730	†1,200			330 14.35		144 2.36	*660 13.73	80 2.26	2.4	120	86
7B1	7.6	1,770	†1,200			320 13.91		156 2.56	*650 13.52	100 2.82	2.0	160	81
9E1	7.5	1,760	†1,200			340 14.78		162 2.66	*640 13.31	100 2.82	1.8	140	84
9H1	7.6	1,420	†940			295 12.83		182 2.98	*540 11.23	65 1.83	1.9	140	82
9N1	7.7	1,760	†1,200			330 14.35		152 2.45	*600 12.48	80 2.26	1.5	120	86
11D1	7.4	1,380	†910			195 8.48		220 3.61	*620 12.90	45 1.27	1.8	390	52

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
15/13-36N1	2698	Price Giffen, 6	1,926	R, G, 16	646	1,926			98	D	Irr	DWB	14	Clear.
36P2	2614	5	1,800	16	582	1,800			94	D	Irr	DWB	14	Do.
15/14-1D1	1409	Ensher and Alexander		16					78	S	Irr	DWB	14	Do.
4D1	2453	Murietta Farms, 4	1,655	R, G, 16	470	1,655			83	D	Irr	DWB	14	Do.
4J1	2622	14	1,230	R, G, 16	553	1,230			81	S	Irr	DWB	14	Do.
4M1	2835	5	1,613	R, G	650	1,613			87	D	Irr	DWB	14	Do.
6D1	2702	Frank Coit, 5 A		16					89	D	Irr	DWB	14	Do.
6H1	2609	9	1,549	R, G	660	1,549			78	D	Irr	DWB	14	Do.
6N1	3186	11							89	D	Irr	DWB	14	Do.
7B1	1963	6 A	1,573	16	674	1,499			88	S	Irr	DWB	14	Do.
9E1	1322	Murietta Farms, 6		R, G, 16			4-25-51	340.2	87	D	Irr	DWB	14	Do.
9H1	2732	D-9	m1,330	R, G, 16	498	1,444	4-27-51	p 342.0	84	D	Irr	DWB	14	Do.
9N1	2675	SW-9	1,460	16	501	1,460	4-25-51	p 392.5	87	D	Irr	DWB	14	Do.
11D1	2683	Wm. Deal-Ryan		R, G, 16					75	D	Irr	DWB	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
15/14-11E2	7.4	1,480	†990			230 10.00		214 3.51	*620 12.90	50 1.41	1.8	330	60
12M1	7.4	1,390	†920			190 8.26		216 3.54	*540 11.23	45 1.27	1.6	330	56
14J2	7.4	1,250	†800			195 8.48		154 2.53	*400 8.32	45 1.27	1.3	130	77
17J1	7.6	1,780	†1,200			265 11.52		202 3.31	*730 15.18	40 1.13	2.1	320	64
17Q1	7.8	2,040	†1,500			330 14.35		146 2.39	*700 14.56	100 2.82	2.3	180	80
18B1	7.5	1,330	†870			200 8.70		160 2.62	*460 9.57	50 1.41	1.5	170	72
18D1	7.5	1,680	†1,200			285 12.39		152 2.49	*580 12.06	70 1.97	2.2	90	87
21N1	7.5	1,600	†1,100			350 15.22		164 2.70	*580 12.06	95 2.68	2.8	75	91
23B1	7.5	1,520	†1,000			190 8.26		216 3.54	*590 12.27	45 1.27	1.3	325	56
23C1	7.3	1,610	†1,100			205 8.91		222 3.64	*600 12.48	45 1.27	1.5	305	59
23D2	7.4	3,460	†2,700			300 13.05		84 1.38	*2,000 41.60	45 1.27	3.0	1,380	32
29Q1	7.3	1,380	†910			215 9.35		132 2.16	*600 12.48	40 1.13	1.9	255	65
29R1	7.5	1,550	†1,000			300 13.05		136 2.23	*620 12.90	60 1.69	2.5	205	76
30E1	7.5	1,600	†1,100			275 11.96		134 2.20	*680 14.14	45 1.27	2.1	265	69

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
15/14-11E2	3159	Wm. Deal-Ryan	900	R, G, 16	444	900			76	D	Irr	DWB	14	Clear.
12M1	2470	Ensher and Alexander, 3	1,276	R, G, 16					76	D	Irr	DWB	14	Do.
14J2	1700	Tidewater Assoc. Oil Co., Levis, 2.	825	P, 12					82	D	Ind	DWB	14	Do.
17J1	1196	Murietta Farms, 7	1,300	R, G, 16	424	1,300			79	D	Irr	DWB	14	Do.
17Q1	1707	8	1,750	16	599	1,750	4-25-51	358.2	87	D	Irr	DWB	14	Do.
18B1	2304	Frank Coit, 8	1,410	R, G, 16	509	1,410	4-25-51	402.0	86	S	Irr	DWB	14	Do.
18D1	2285	7	1,560	R, G, 16	496	1,560			90	S	Irr	DWB	14	Do.
21N1	2063	Murietta Farms, 9	1,202		413	1,202			95	D	Irr	DWB	14	Do.
23B1	2259	Sample-Ryan		R, G, 16					76	D	Irr	DWB	14	Do.
23C1	2567	do	1,278	16			4-30-51	240.9	77	D	Irr	DWB	14	Do.
23D2		do								P	Dom	DWB	14	Do.
29Q1	2559	Murietta Farms, 10 A	1,600	R, G, 16	624	1,600	4-30-51	395.9	86	D	Irr	DWB	14	Do.
29R1	1404	10	1,619	R, G, 16	606	1,619	4-24-51	377.1	87	D	Irr	DWB	14	Do.
30E1	2525	Price Giffen, 2	1,689	R, G, 16	746	1,689			87	D	Irr	DWB	14	Do.

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TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
15/14-30N1	7.5	1,480	†990			265 11.52		150 2.46	*630 13.10	45 1.27	2.0	245	70
31N2	7.9	1,340	†880			245 10.65		140 2.30	*580 12.06	40 1.13	2.0	160	77
32N1	7.3	1,600	†1,100			285 12.39		138 2.26	*660 13.73	55 1.55	2.2	220	74
33G1	7.6	1,330	†870			220 9.57		114 1.87	*560 11.65	45 1.27	1.9	185	72
36Q2	7.4	1,880	†1,300			320 13.91		124 2.03	*640 13.31	85 2.40	1.9	110	86
15/15-2R1	7.7	2,620	†1,700			550 23.92		252 4.13	*690 14.35	340 9.59	1.6	280	81
4N1	7.3	5,580	†3,200			810 35.22		228 3.74	*170 3.54	470 13.25	1.4	890	66
6N1	7.4	1,460	†970			145 6.31		246 4.03	*460 9.57	50 1.41	1.2	370	46
8C1	7.2	3,240	†2,000			400 17.39		206 3.38	*1,200 24.96	235 6.63	1.0	225	79
8N1	7.6	1,740	†1,200			160 6.69		224 3.67	*560 11.65	75 2.12	.8	540	39
10N1	7.2	2,440	†1,600			300 13.05		202 3.31	*740 15.39	190 5.36	.9	875	43
14A1	7.5	7,480	†4,100					342 5.61		550 15.51	5.5	1,815	71
16K1	7.4	1,860	†1,300			170 7.39		200 3.28	*660 13.73	70 1.97	.8	600	38
17D1	7.4	1,740	†1,200			145 6.31		226 3.71	*580 12.06	70 1.97	.7	530	37

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
15/14-30N1	2506	Price Giffen, 1	1,700	16	606	1,700			91	D	Irr	DWB	14	Clear.
31N2	2548	4	1,830	R, G, 16	722	1,830			93	D	Irr	DWB	14	Do.
32N1	2522	3	1,690	16	596	1,690			91	D	Irr	DWB	14	Do.
33G1	2711	Murietta Farms, 11	1,656	R, G, 16	600	1,656			88	S	Irr	DWB	14	Do.
36Q2	8195	F. A. Yearout	1,734	R, G, 16	732	1,734	8- 6-51	p 376.7	88	D	Irr	DWB	14	Do.
15/15-2R1	11489	Shirley		R, G, 14			4-26-51	p 94.9	68	D	Irr	DWB	15	Do.
4N1	2410	Reece Bros., Mabray and Davis.		R, G, 16					73	D	Irr	DWB	15	Do.
6N1	2519	E. E. Chinn		R, G, 16					73	D	Irr	DWB	15	Do.
8C1	2409	Reece Bros., 2		R, G, 16			4-30-51	p 121.8	73	D	Irr	DWB	14	Do.
8N1	2408	S. E. and M. R. Lowrance		16			7-28-50	p 186.4	74	D	Irr	DWB	14	Do.
10N1	2685	do	582	R, 14					72	D	Irr	DWB	15	Do.
14A1	13458	Martin Costales	627	R, G, 16	168	600	8- 6-51	p 93.5	66	D	Irr	DWB	15	Do.
16K1	2612	Dennison-Ryan		R, G, 12					72	D	Irr	DWB	15	Do.
17D1	2418	do	613	12	240	600			73	D	Irr	DWB	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions						Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
15/15-18E1	7.4	1,520	†1,000	----	----	150 6.52	----	226 3.71	*540 11.23	50 1.41	0.9	460	41
20N1	7.3	1,410	†930	----	----	150 6.52	----	206 3.38	*470 9.78	50 1.41	1.6	325	50
20N2	7.6	1,510	†1,000	----	----	235 10.22	----	174 2.85	*500 10.40	55 1.55	1.0	165	76
21B1	7.4	1,720	†1,200	----	----	320 13.91	----	110 1.80	*580 12.06	60 1.69	1.7	80	90
22N1	7.4	1,890	†1,300	----	----	135 5.87	----	188 3.08	*690 14.35	65 1.83	.7	655	31
22Q1	7.5	1,520	†1,000	----	----	140 6.09	----	168 2.76	*740 15.39	55 1.55	.5	710	30
25N1	7.5	1,480	†990	----	----	162 7.04	----	148 2.43	*690 14.35	50 1.41	.5	530	40
27D1	7.4	1,720	†1,200	----	----	150 6.52	----	230 3.77	*570 11.86	60 1.69	1.0	520	39
27N1	7.6	1,540	†1,000	----	----	128 5.57	----	184 3.02	*690 14.35	70 1.97	.6	760	27
30N1	7.5	1,480	†990	----	----	145 6.31	----	220 3.61	*410 8.53	45 1.27	1.0	455	41
31Q1	7.3	1,280	†830	----	----	165 7.17	----	136 2.23	*460 9.57	35 .99	.7	245	59
33E1	7.5	1,130	†720	----	----	200 8.70	----	114 1.87	*390 8.11	45 1.27	1.1	165	73
35H1	7.6	1,610	†1,100	----	----	174 7.57	----	126 2.07	*840 17.47	55 1.55	1.0	695	35
35N1	7.7	1,620	†1,100	----	----	132 5.74	----	172 2.82	*700 14.56	60 1.69	.5	800	26

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
15/15-18E1	2735	W. D. Kaplan		R, G, 16			4-27-51	p 196.8	77	D	Irr	DWB	14	Clear.
20N1	2407	Pucheu		R, G, 16			8- 6-51	p 284.7	77	D	Irr	DWB	14	Do.
20N2	1782	do		16					81	D	Irr	DWB	14	Do.
21B1	2178	Dennison-Ryan	965	R, G, 14					82	D	Irr	DWB	15	Do.
22N1	2415	Reece Bros., 4	792	R, G					73	D	Irr	DWB	15	Do.
22Q1	2416	5	749	R, G, 16			8- 6-51	p 118.2	72	D	Irr	DWB	15	Do.
25N1	2639	Reece Bros	532	R, G, 12			4-30-51	85.8	74	D	Irr	DWB	15	Do.
27D1	2425	Dennison-Ryan	613	12	240	600	8- 6-51	p 123.59	74	D	Irr	DWB	15	Do.
27N1	2638	Reece Bros	589	R, G, 16			8- 6-51	p 159.0	73	D	Irr	DWB	15	Do.
30N1	2668	J. J. and C. I. Imperatrice		R, G, 16					77	D	Irr	DWB	14	Do.
31Q1	3227	do							79	D	Irr	DWB	14	Do.
33E1	3179	Reece Bros	1,188	R, G, 16	400	1,188			81	D	Irr	DWB	15	Do.
35H1	3200	do		R, G, 12					72	D	Irr	DWB	15	Do.
35N1	2684	do	833	R, G, 12					75	D	Irr	DWB	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
16/14-1Q2	7.9	1,590	1,212	74 3.69	55 4.52	255 11.09	0	108 1.77	716 14.91	57 1.61	2.3	410	57
4E1	7.5	1,430	941	69 3.44	20 1.64	220 9.57	0	132 2.16	525 10.93	40 1.13	1.6	254	65
4H1	7.5	1,320	865	47 2.35	15 1.23	220 9.57	0	132 2.16	476 9.91	40 1.13	1.9	179	73
5N1	7.5	1,590	1,102	75 3.74	18 1.48	265 11.52	0	136 2.23	627 13.05	48 1.35	1.6	261	69
5R1	7.4	1,260	825	42 2.10	11 0.90	220 9.57	0	136 2.23	447 9.31	36 1.02	1.8	150	76
7Q1	7.4	1,380	948	95 4.74	24 1.97	195 8.48	0	214 3.51	482 10.03	46 1.30	1.3	336	56
10N1	7.3	1,550	1,059	87 4.34	26 2.14	215 9.35	0	124 2.03	627 13.05	41 1.16	2.1	324	59
10Q1	7.3	1,630	1,142	99 4.94	34 2.80	220 9.57	0	110 1.80	691 14.39	42 1.18	2.3	387	55
11B1	7.4	1,640	1,153	88 4.39	30 2.47	255 11.09	0	108 1.77	678 14.12	47 1.33	2.0	343	62
11G1	7.7	1,800	1,318	71 3.54	126 10.36	175 7.61	0	170 2.79	812 16.91	49 1.38	1.2	695	35
14N1	7.4	1,540	1,086	109 5.44	37 3.04	180 7.83	0	134 2.20	652 13.57	40 1.13	1.5	424	48
23N1	7.5	1,790	1,294	138 6.89	62 5.10	195 8.48	0	160 2.62	756 15.74	63 1.78	1.3	600	41
24P1	7.4	1,240	807	43 2.15	28 2.30	190 8.26	0	160 2.62	417 8.68	48 1.35	2.0	222	65
24R1	7.2	1,300	854	54 2.69	25 2.06	190 8.26	0	152 2.49	454 9.45	54 1.52	1.5	238	63

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
16/14-1Q2	1784	F. A. Yearout, 1	1,645	R, G	420	1,645			85	S	Irr	JMM	15	Clear.
4E1	2484	Murietta Farms, 13	1,655	R, G, 16	567	1,655	8- 6-51	p 486.8	87	D	Irr	JMM	15	Do.
4H1	3303	Murietta Farms							90	D	Irr	JMM	15	Do.
5N1	2544	Murietta Farms, 13 B	1,763	16	626	1,763			89	D	Irr	JMM	15	Do.
5R1	2539	13 A		R, G, 16			8- 6-51	p 530.0	90	D	Irr	JMM	15	Do.
7Q1		PG&E Co., Panoche Substation.	1,070	10					88	D	Dom	JMM	15	Do.
10N1	9171	Wm. Deal	1,685						88	D	Irr	JMM	15	Do.
10Q1	9033	do		R, G, 16					88	D	Irr	JMM	15	Do.
11B1	1303	do	1,724	R, G, 16	408	1,724			86	D	Irr	JMM	15	Do.
11G1	1317	Deal-Kummerfeld	1,856	R, G, 16			8- 6-51	p 373.7	78	D	Irr	JMM	15	Do.
14N1	8722	Giffen, Cantua 21	2,120	R, G, 16	705	2,120			88	D	Irr	JMM	15	Do.
23N1	8720	Cantua 20	2,116	16	780	2,116			87	D	Irr	JMM	15	Do.
24P1	9123	Cantua 24		R, G, 16			4-26-51	535.6	88	D	Irr	JMM	15	Do.
24R1	9130	Cantua 26		R, G, 16					87	D	Irr	JMM	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
16/14-25D1	7.3	1,460	336	74 3.69	37 3.04	200 8.70	0	164 2.69	551 11.47	49 1.38	1.5	336	56
16/15-8N1	7.2	1,660	1,119	87 4.34	51 4.19	205 8.91	0	184 3.02	606 12.62	77 2.17	1.9	426	51
9Q1	7.4	1,550	1,104	103 5.14	99 8.14	117 5.09	0	208 3.41	598 12.45	85 2.40	.9	664	28
10N2	7.0	1,570	1,079	97 4.84	75 6.17	147 6.39	0	166 2.72	593 12.35	84 2.37	1.2	550	37
11L1	8.0	1,720	1,250	117 5.84	106 8.72	132 5.74	0	186 3.05	736 15.32	67 1.89	.2	728	28
13N1	7.2	1,340	891	65 3.24	34 2.80	165 7.17	0	114 1.87	523 10.89	46 1.30	1.7	302	54
16Q1	7.3	1,390	947	76 3.79	61 5.02	147 6.39	0	190 3.11	514 10.70	54 1.52	1.2	440	42
16Q2	7.3	2,490	1,899	198 9.88	186 15.30	147 6.39	0	194 3.18	1,160 24.15	112 3.16	.9	1,260	20
17N1	7.0	1,290	853	55 2.74	24 1.97	182 7.91	0	139 2.28	476 9.91	46 1.30	1.7	236	63
18N1	7.2	1,320	891	62 3.09	18 1.48	200 8.70	0	116 1.90	509 10.60	44 1.24	1.2	228	66
19Q1	7.1	1,450	957	55 2.74	17 1.40	238 10.35	0	128 2.10	512 10.66	70 1.97	2.1	207	71
20G1	7.1	1,430	978	87 4.34	53 4.36	154 6.70	0	152 2.49	551 11.47	56 1.58	1.6	435	44
20G3	7.1	1,370	912	57 2.84	24 1.97	210 9.13	0	129 2.11	499 10.39	56 1.58	2.2	240	65
23E1	7.4	1,760	1,230	111 5.54	105 8.63	134 5.83	0	193 3.16	685 14.26	100 2.82	.9	708	29

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
16/14-25D1	9131	Giffen, Cantua 25		R, G, 16					88	D	Irr	JMM	15	Clear.
16/15-8N1	1786	F. A. Yearout, 3	1,668	R, G, 16	515	1,668	4-25-51	336.6	80	D	Irr	JMM	15	Do.
9Q1	8456	C. Brown	1,261	R, G, 16	516	1,261	4-25-51	p 305.7	76	S	Irr	JMM	15	Do.
10N2	8924	do		R, G, 16					78	D	Irr	JMM	15	Clear, sulfur odor.
11L1	4620	Vista del Llano, 43							75	D	Irr	JMM	15	Clear.
13N1	4288	41		16					80	D	Irr	JMM	15	Do.
16Q1	4361	42 W		R, G, 14					80	S	Irr	JMM	15	Do.
16Q2	4361	42 E	1,220	10					74	D	Irr	JMM	15	Do.
17N1	8649	F. A. Yearout, 6	1,643	R, G, 16	606	1,643			85	D	Irr	JMM	15	Do.
18N1	8741	7	1,706	R, G, 16	609	1,706	7-20-50	p 481.0	86	D	Irr	JMM	15	Do.
19Q1	9132	Giffen, Cantua 27		G, 16			4-26-51	485.7	86	D	Irr	JMM	15	Do.
20G1	4622	Vista del Llano, 44	2,010	R, G, 16	452	2,010			82	S	Irr	JMM	15	Do.
20G3	9110	32	1,791	R	706	1,791			84	D	Irr	JMM	15	Do.
23E1	8257	W. C. Brown	1,600	16	400	1,600	8- 4-51	p 341.0	77	D	Irr	JMM	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
16/15-23F1	7.2	1,770	1,255	109 5.44	73 6.00	188 8.17	0	153 2.51	714 14.86	95 2.68	1.3	572	42
24N2	7.1	1,170	771	50 2.50	15 1.23	170 7.39	0	89 1.46	456 9.49	34 0.96	1.9	186	66
25Q1	7.1	1,540	1,074	74 3.69	56 4.61	197 8.57	0	130 2.13	619 12.89	62 1.75	1.5	415	51
26M1	7.8	1,590	1,112	101 5.04	110 9.05	100 4.35	0	220 3.61	630 13.12	63 1.78	1.0	704	24
26N1	7.2	2,400	1,965	179 8.93	193 15.87	172 7.48	0	200 3.28	1,270 26.44	52 1.47	.6	1,240	23
27N1	7.0	1,500	1,003	50 2.50	33 2.71	230 10.00	0	157 2.57	547 11.76	64 1.81	2.2	260	60
27P1	7.0	1,450	991	69 3.44	63 5.18	160 6.96	0	171 2.80	565 11.76	48 1.35	1.6	431	45
31J1	7.4	1,360	887	45 2.25	32 2.63	200 8.70	0	164 2.69	449 9.35	78 2.20	1.5	244	64
31Q1	7.3	1,380	943	64 3.19	50 4.11	186 8.09	0	158 2.59	505 10.51	58 1.64	2.1	365	53
31R1	7.1	1,500	996	65 3.24	63 5.18	172 7.48	0	184 3.02	527 10.97	76 2.14	1.6	421	47
35E1	7.2	1,350	912	36 1.80	13 1.07	255 11.09	0	118 1.93	496 10.33	52 1.47	2.3	144	79
35M1	7.3	2,370	1,860	166 8.28	178 14.64	176 7.65	0	224 3.67	1,180 24.57	50 1.41	.8	1,150	25
35N2	7.1	1,860	1,377	115 5.74	133 10.94	135 5.87	0	288 3.74	836 17.40	46 1.30	.8	834	26
35Q1	7.3	1,590	1,060	49 2.45	29 2.38	275 11.96	0	162 2.65	540 11.24	85 2.40	1.9	242	71

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
16/15-23F1	9125	W. C. Brown	1,375	R, G, 14	535	1,376			78	D	Irr	JMM	15	Clear, sulfur odor.
24N2	4352	Sample, south		R, G, 16			8- 4-51	p 361.5	82	D	Irr	JMM	15	Clear.
25Q1	4221	Vista del Llano, 13	1,694	16	409	1,669	7-20-50	p 360.4	81	S	Irr	JMM	14	Do.
26M1	4229	33	1,701	16	468	1,600	7-20-50	p 378.8	86	D	Irr	JMM	15	Turbid.
26N1	4619	40	709	12	361	709			74	S	Irr	JMM	15	Clear.
27N1	8234	45	1,800	16	490	1,800			84	S	Irr	JMM	15	Do.
27P1	4197	31	1,890	R, G, 16	512	1,890			81	(3)	Irr	JMM	15	Do.
31J1	9165	Giffin, Cantua 28		R, G, 16			4-26-51	494.2	87	D	Irr	JMM	15	Do.
31Q1	8708	Cantua 18	2,228	R, G, 16	699	2,228	8- 3-51	p 604.8	84	D	Irr	JMM	14	Do.
31R1	8707	Cantua 19	2,138	R, G, 16	705	2,138			81	D	Irr	JMM	15	Do.
35E1	4376	Vista del Llano, 37	m 1,642		423	1,906			84	D	Irr	JMM	14	Do.
35M1	4527	38	585	12					74	S	Irr	JMM	14	Do.
35N2	4339	30		14	600				76	S	Irr	JMM	14	Do.
35Q1	4372	36	1,797	16	404	1,797	7-19-50	p 407.5	82	S	Irr	JMM	14	Do.

See footnotes at end of table, page 575.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
16/15-36Q1	7.2	1,290	859	49 2.45	24 1.97	205 8.91	0	110 1.80	471 9.81	54 1.52	1.9	221	67
36R1	7.3	1,620	1,121	61 3.04	37 3.04	260 11.31	0	118 1.93	617 12.85	86 2.43	2.0	304	65
4N1	7.3	1,222	†780			165 7.17		184 3.02	*450 9.36	64 0.80	1.4	360	50
5N1	7.2	1,581	†1,100			176 7.65		140 2.29	*800 16.66	72 2.03	1.3	508	43
6N1	7.2	1,517	†1,000			143 6.22		136 2.23	*800 16.64	52 1.47	1.2	560	36
9N1	7.7	1,469	†980			204 8.87		140 2.30	*650 13.52	72 2.03	1.7	384	53
20N1	7.8	1,824	†1,300			132 5.74		174 2.85	*900 18.72	60 1.69	1.1	770	27
28M1	7.5	1,721	†1,200			176 7.65		124 2.03	*760 15.81	60 1.69	1.4	615	38
30N1	7.2	1,410	953	76 3.79	40 3.29	180 7.83	0	154 2.52	527 10.97	52 1.47	1.7	354	53
16/16-32G1	8.1	1,190	†760			165 7.17		112 1.84	*470 9.78	45 1.27	1.4	205	64
32N1	7.3	1,138	†720			176 7.65		102 1.67	*450 9.36	68 1.92	1.5	196	66
16/17-30Q1	7.3	1,105	†700			165 7.17		144 2.36	*400 8.32	44 1.24	1.0	216	62
31Q1	7.5	1,443	†950			204 8.87		132 2.16	*530 11.02	65 1.83	1.1	360	55
17/15-5Q1	7.4	1,770	1.284	100 4.99	135 11.10	136 5.91	0	228 3.74	736 15.32	64 1.81	1.1	804	27

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
16/15-36Q1	4351	Vista del Llano, 18	m 1,381	16	376	1,446	4-25-51	368.4	85	D	Irr	JMM	14	Clear.
36R1	9281	Vista del Llano							85	D	Irr	JMM	14	Do.
16/16-4N1	8724	F. H. Waechter	755	R, G, 12	246	755	5- 1-51	105.9	74	D	Irr	DWB	16	Do.
5N1	9232	Alex. Eubanks	895	17	250	895			74	D	Irr	DWB	16	Do.
6N1	8961	Gragnani Bros	896	R, G, 16	250	896	5- 1-51	111.0	74	D	Irr	DWB	16	Do.
9N1	9200	Rabb Bros							74	D	Irr	DWB	16	Do.
20N1	4600	Vista del Llano, 23	m 531	14	300	560	8- 4-51	p 232.5	75	D	Irr	DWB	16	Do.
28M1	4603	24	m 534	12	269	540	5- 2-51	160.5	83	D	Irr	DWB	16	Do.
30N1	8763	19	1,699	16					80	S	Irr	JMM	14	Do.
32G1	4336	16	1,520	16	353	1,520			75	D	Irr	DWB	16	Do.
32N1	4168	Cantua, 4	1,602	16	396	1,586			73	D	Irr	DWB	16	Do.
16/17-30Q1	8857	Harnish Bros., N 30	710	R, G, 16	230	710	5- 2-51	99.32	73	D	Irr	DWB	16	Do.
31Q1	8562	Airway Farms, 3		R, G, 16	240	700	5- 2-51	p 158.08	75	D	Irr	DWB	16	Do.
17/15-5Q1	8710	Giffen, Cantua 14	2,130	16	729	2,130	8-16-50	p 550.3	76	D	Irr	JMM	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
17/15-6M1	7.6	1,370	931	80 3.99	103 8.47	91 3.96	0	234 3.83	475 9.89	67 1.89	0.5	623	24
6Q1	7.3	1,770	1,267	92 4.59	74 6.09	215 9.35	0	176 2.88	713 14.84	84 2.37	1.7	534	47
7D1	7.5	937	606	48 2.40	59 4.85	75 3.26	0	244 4.00	272 5.66	32 0.90	.4	362	31
7N1	7.5	1,730	1,207	91 4.54	141 11.60	104 4.52	0	226 3.70	658 13.70	102 2.88	.6	807	22
8N1	7.3	1,760	1,237	94 4.69	138 11.35	114 4.96	0	226 3.70	680 14.16	100 2.82	.8	802	24
8P1	7.4	1,810	1,310	92 4.59	132 10.86	156 6.78	0	228 3.74	734 15.28	84 2.37	.9	772	30
13D1	7.2	1.360	923	34 1.70	11 0.90	265 11.52	0	108 1.77	496 10.33	62 1.75	2.2	130	82
13N1	7.3	1.870	1,259	33 1.65	8.7 0.72	400 17.39	0	148 2.43	616 12.82	126 3.55	2.3	118	88
14E1	7.3	1,810	1, 21	54 2.69	43 3.54	300 13.05	0	194 3.18	617 12.85	108 3.05	2.7	312	68
15N1	7.2	1,820	1,227	75 3.74	46 3.78	245 10.65	0	153 2.51	695 14.47	88 2.48	3.1	376	59
16N1	7.4	2,160	1,575	117 5.84	139 11.43	186 8.09	0	213 3.49	881 18.34	146 4.12	1.3	864	32
16Q1	8.2	2,020	1,463	109 5.44	110 9.05	182 7.91	0	198 3.24	840 17.49	122 3.44	2.2	724	35
17N1	7.2	1,880	1,342	85 4.24	125 10.28	170 7.39	0	240 3.93	749 15.59	94 2.65	1.5	726	34
18Q1	7.3	1,600	1,077	69 3.44	109 8.96	124 5.39	0	230 3.77	568 11.83	94 2.65	1.0	620	30

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
17/15-6M1	8709	Giffen, Cantua 17	2,090	16	695	2,090			81	D	Irr	JMM	14	Clear.
6Q1	9106	Cantua 15 new	2,032	R, G, 18	773	2,032			84	D	Irr	JMM	14	Do.
7D1		Shell Oil Co., Halfway pump station 4.	1,023	10					81	D	Ind	JMM	14	Do.
7N1	8680	Giffen, Cantua 11	2,088	R, G, 16	700	2,088			76	D	Irr	JMM	14	Do.
8N1	8711	Cantua 12	2,136	R, G, 16	687	2,136			77	D	Irr	JMM	14	Do.
8P1	8685	Cantua 13	2,246	R, G, 16	697	2,246			76	D	Irr	JMM	14	Do.
13D1	8209	Vista del Llano, 14	1,859	R, G, 16	521	1,851	4-27-51	395.2	90	D	Irr	JMM	14	Do.
13N1	8184	20	2,019	R, G, 16	714	2,019	8-23-50	p 460.5	102	S	Irr	JMM	14	Do.
14E1	8689	Giffen, Cantua 5	2,176	R, G, 16	687	2,176	8- 3-51	p 521.3	88	D	Irr	JMM	14	Do.
15N1	8686	Cantua 6	2,106	R, G, 16	700	2,106			86	D	Irr	JMM	14	Do.
16N1	8713	Cantua 8	2,123	R, G, 16	710	2,123	4-26-51	519.7	78	D	Irr	JMM	14	Do.
16Q1	8712	Cantua 7	2,114	R, G, 16	703	2,114	12-12-50	p 588.6	80	D	Irr	JMM	14	Do.
17N1	8681	Cantua 9	2,045	R, G, 16	682	2,045			74	D	Irr	JMM	14	Do.
18Q1	9078	Cantua 22					8- 3-51	p 700.1	79	D	Irr	JMM	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
17/15-20N1	7.3	1,670	1,234	69 3.44	167 13.73	165 7.17	0	264 4.33	626 13.03	76 2.14	1.5	858	29
20Q1	7.3	1,970	1,309	83 4.14	31 2.55	230 10.00	0	243 3.98	729 15.18	114 3.22	2.4	334	60
21M1	7.1	2,540	1,822	138 6.89	162 13.32	200 8.70	0	209 3.43	988 20.57	229 6.46	1.9	1,010	30
21Q1	7.3	2,450	1,763	129 6.44	154 12.66	200 8.70	0	216 3.54	947 19.72	225 6.35	2.0	955	31
22B1	7.1	2,220	1,531	129 6.44	107 8.80	200 8.70	0	189 3.10	838 17.45	162 4.57	2.0	762	36
23N1	7.2	1,800	1,288	79 3.94	60 4.93	245 0.65	0	164 2.69	711 14.80	109 3.07	3.0	444	55
25N1	6.9	1,990	1,444	89 4.44	32 2.63	330 14.35	0	115 1.88	856 17.82	76 2.14	3.5	354	67
27B1	7.3	2,150	1,546	113 5.64	101 8.31	230 10.00	0	216 3.54	823 17.13	170 4.79	2.7	698	42
27K1	7.0	2,500	1,835	109 5.44	69 5.67	365 15.87	0	200 3.28	1,030 21.44	158 4.46	4.6	556	59
27Q1	7.1	3,280	2,486	202 10.08	152 12.50	355 15.44	0	178 2.92	1,420 29.56	265 7.47	3.7	1,130	41
27R1	6.9	2,840	2,120	162 8.08	121 9.95	340 14.78	0	175 2.87	1,190 24.77	217 6.12	3.7	902	45
28R1	7.1	4,100	1,820	364 18.16	221 18.17	360 15.65	0	166 2.72	2,050 42.68	320 9.03	2.6	1,820	30
35B1	7.3	2,760	984	177 8.83	132 10.86	315 13.70	0	164 2.69	1,140 23.73	234 6.60	2.6	984	41
35M1	6.9	3,220	2,447	210 10.48	128 10.53	385 16.74	0	158 2.59	1,410 29.35	232 6.54	4.2	1,050	44

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
17/15-20N1	8723	Giffen, Cantua 1	2,151	R, G, 16	725	2,151	8- 3-51	p 589.1	77	D	Irr	JMM	14	Clear.
20Q1	9118	Cantua 23		R, G, 18					78	D	Irr	JMM	14	Do.
21M1	8682	Cantua 2	2,084	R, G, 16	711	2,084			78	D	Irr	JMM	14	Do.
21Q1	8714	Cantua 3	2,095	R, G, 16	709	2,095	8- 3-51	p 613.6	80	D	Irr	JMM	14	Do.
22B1	8719	Cantua 4	2,130	R, G, 16	750	2,130			84	D	Irr	JMM	14	Do.
23N1	8687	M. Giffen, MG-1	2,139	R, G, 16	703	2,139	11-28-50	p 513.0	88	D	Irr	JMM	14	Do.
25N1	9075	MG-8		R, G, 16					84	D	Irr	JMM	14	Do.
27B1	8718	MG-2	2,148	R, G, 16	706	2,148	11-28-50	p 580.5	84	D	Irr	JMM	14	Do.
27K1	8836	MG-3	2,130	R, G, 16	912	2,130	4-27-51	p 638.0	88	D	Irr	JMM	14	Do.
27Q1	8683	MG-4	2,164	R, G, 16	713	2,164			83	D	Irr	JMM	14	Do.
27R1	8863	MG-5	2,129	R, G, 16	691	2,129			86	D	Irr	JMM	14	Do.
28R1	Wind									(4) at base of windmill.	Dom	JMM	14	Do.
35B1	9052	M. Giffen, MG-7		R, G, 16			8- 3-51	p 613.3	84	D	Irr	JMM	14	Turbid, sandy.
35M1	8715	MG-6	2,123	R, G, 16	701	2,123			86	D	Irr	JMM	14	Clear.

See footnotes at end of table, page 575.

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TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions						Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
17/16-1N1	7.1	1,650	†1,100	----------	----------	200 8.70	0	116 1.90	677 14.09	65 1.83	1.1	415	51
4E1	7.1	1,270	†830	----------	----------	200 8.70	0	128 2.10	382 7.95	82 2.31	1.3	145	75
4N1	7.2	1,340	†880	----------	----------	175 7.61	0	118 1.93	520 10.83	50 1.41	1.1	295	56
6E1	7.5	1,660	†1,100	----------	----------	170 7.39	0	168 2.75	665 13.84	77 2.17	1.4	620	37
7M1	7.1	1,250	†810	----------	----------	205 8.91	0	82 1.34	438 9.12	56 1.58	1.6	112	80
8L1	6.9	1,330	†870	----------	----------	200 8.70	0	102 1.67	448 9.33	76 2.14	1.9	175	71
11N1	6.9	1,710	†1,200	----------	----------	200 8.70	0	101 1.66	756 15.74	53 1.49	1.1	440	50
13N1	6.9	1,390	†920	----------	----------	192 8.35	0	149 2.44	519 10.81	56 1.58	.6	325	56
18E1	7.0	1,480	†990	----------	----------	255 11.09	0	100 1.64	504 10.49	90 2.54	1.5	162	77
18N1	7.1	1,570	†1,100	----------	----------	265 11.52	0	94 1.54	535 11.14	102 2.88	1.8	190	75
18Q1	7.1	1,350	†890	----------	----------	230 10.00	0	84 1.38	451 9.39	90 2.54	1.9	148	77
19N1	7.5	1,620	†1,100	----------	----------	285 12.39	0	101 1.66	563 11.72	99 2.79	1.8	200	76
23N2	7.1	1,450	†960	----------	----------	190 8.26	0	107 1.75	570 11.87	53 1.49	1.4	330	56
24N1	7.3	1,310	†860	----------	----------	170 7.39	0	123 2.02	500 10.41	45 1.27	.8	285	56

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
17/16-1N1	8581	Airway Farms, 4		R, G, 16			4-24-51	p 217.2	76	D	Irr	DWM	15	Clear.
4E1	4177	Vista del Llano, 6	1,580	16	416	1,580			83	D	Irr	DWM	15	Do.
4N1	4167	3	1,554	16	416	1,549			80	D	Irr	DWM	15	Do.
6E1	8901	5	1,653	R, G, 16	631	1,653	4-24-51	344.8	80	D	Irr	DWM	15	Do.
7M1	4515	26	m1,790	16	420	1,924			88	D	Irr	DWM	15	Do.
8L1	8604	8	1,800	R, G, 16	553	1,800			84	D	Irr	DWM	15	Do.
11N1	4711	Matheson, 3	903	R, G, 16	500	903	8- 4-51	p 290.0	77	D	Irr	DWM	15	Do.
13N1	8175	2	m 570	R, G, 16					78	D	Irr	DWM	15	Do.
18E1	4166	Vista del Llano, 2	1,615	16	667	1,615			88	D	Irr	DWM	14	Do.
18N1	8241	10	1,818	R, G, 16	507	1,818			89	D	Irr	DWM	14	Do.
18Q1	8516	28	1,800	R, G, 16	340	1,800	4-30-51	397.4	87	D	Irr	DWM	14	Do.
19N1	8624	S. T. Terry, 1	1,600	R, G, 16	600	1,600			92	D	Irr	DWM	14	Do.
23N2	9156	Matheson, 1	1,431	R, G, 16	524	1,431			80	D	Irr	DWM	15	Do.
24N1	8303	Harnish Bros., 7	1,518	R, G, 16	441	1,525			80	D	Irr	DWM	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
17/16-25N1	6.9	1,620	†1,100	----------	----------	200 8.70	0	119 1.95	658 13.70	62 1.75	0.8	425	51
26N1	7.0	1,360	900	54 2.69	8.5 0.70	230 10.00	0	94 1.54	484 10.08	76 2.14	1.3	170	75
27Q1	6.7	1,990	1,450	156 7.78	25 2.06	275 11.96	0	93 1.52	844 17.57	102 2.88	1.7	492	55
28N2	6.6	1,530	1,065	84 4.19	11 0.90	235 10.22	0	61 1.00	657 13.68	46 1.30	2.3	254	67
29N1	6.8	1,360	891	54 2.69	7.3 0.60	220 9.57	0	57 0.93	504 10.49	76 2.14	1.8	164	74
30A1	7.2	2,030	1,416	101 5.04	23 1.89	340 14.78	0	102 1.67	752 15.66	148 4.17	2.4	346	68
30N1	6.9	1,730	1,160	81 4.04	19 1.56	270 11.74	0	79 1.29	650 13.53	99 2.79	1.5	280	68
32N1	6.9	1,710	1,158	74 3.69	10 0.82	295 12.83	0	83 1.36	634 13.20	102 2.88	2.2	226	74
33N1	6.7	1,630	1,051	36 1.80	3.9 0.32	330 14.35	0	80 1.31	500 10.41	140 3.95	1.8	106	87
35P1	7.3	2,070	1,243	44 2.20	3.4 0.28	415 18.05	0	152 2.49	334 6.95	370 10.44	1.9	124	88
17/17-15N1	6.8	1,590	1,102	125 6.24	28 2.30	177 7.70	0	105 1.72	654 13.62	66 1.86	.3	427	47
17N1	7.2	1,290	858	73 3.64	25 2.06	170 7.39	0	123 2.02	477 9.93	52 1.47	.2	285	56
19N1	6.9	1,470	1,003	93 4.64	41 3.37	164 7.13	0	135 2.21	579 12.05	60 1.69	.8	400	47
21D1	6.9	936	590	28 1.40	4.4 0.36	165 7.17	0	110 1.80	303 6.31	34 0.96	1.2	88	80

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
17/16-25N1	8610	Harnish Bros., 4	1,470	R, G, 16	515	1,449			80	35 ft	Irr	DWM	15	Clear.
26N1	4094	5	1,802	R, G, 16	761	1,802			86	D	Irr	DWM	15	Do.
27Q1	8202	6	m1,400	R. G, 16	462	1,748	4-30-51	p 361.9	82	D	Irr	DWM	15	Do.
28N2	9177	W. C. Farrell, 2							88	D	Irr	DWM	15	Do.
29N1	8804	5	1,935	R, G, 16	718	1,935	4-30-51	420.8	88	D	Irr	DWM	15	Do.
30A1	8648	1	1,867	R, G, 16					81	D	Irr	DWM	15	Do.
30N1	4227	3	1,524	R, G, 16	670	1,524			90	D	Irr	DWM	14	Do.
32N1	4607	4	1,820	R, G, 16	605	1,820	4-30-51	431.6	93	D	Irr	DWM	15	Do.
33N1	8803	6	1,965	R, G, 16	695	1,965	4-30-51	300.1	101	D	Irr	DWM	15	Do.
35P1	4064	M. E. Willson	m1,445	16	396				90	60 ft	Irr	DWM	15	Do.
17/17-15N1	8809	Airway Farms, 2		R, G	343		4-24-51	p 195.8	74	D	Irr	DWM	15	Do.
17N1	8825	Gardner, 3	1,050	R, G, 16			5- 1-51	p 269.1	78	D	Irr	DWM	15	Do.
19N1	9006	Harnish Bros., 8		R, G, 16					78	D	Irr	DWM	15	Do.
21D1	8282	Gardner, 2		R, G, 16					82	D	Irr	DWM	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
17/17-21N1	7.2	1,280	852	71 3.54	16 1.32	190 8.26	0	102 1.67	481 10.01	44 1.24	0.41	243	63
21R1	7.0	956	633	28 1.40	3.6 0.30	190 8.26	0	133 2.18	288 6.00	56 1.58	1.7	85	83
23Q1	6.8	1,270	834	70 3.49	20 1.64	164 7.13	0	116 1.90	476 9.91	47 1.33	.5	256	58
24P1	6.7	1,190	818	55 2.74	16 1.32	182 7.91	0	131 2.15	454 9.45	46 1.30	.6	203	66
25N1	7.0	1,380	938	81 4.04	24 1.97	175 7.61	0	106 1.74	555 11.55	51 1.44	.7	300	56
27Q1	7.4	1,330	892	78 3.89	25 2.06	175 7.61	0	122 2.00	500 10.41	54 1.52	.5	298	56
27R1	6.8	1,300	868	82 4.09	17 1.40	170 7.39	0	116 1.90	491 10.22	51 1.44	.8	274	57
28R1	6.8	2,980	2,363	320 15.97	86 7.07	305 13.26	0	60 0.98	1,470 30.60	152 4.29	.5	1,150	37
29N1	6.8	1,250	818	64 3.19	16 1.32	175 7.61	0	102 1.67	464 9.66	49 1.38	.7	226	63
29P1	7.5	1,520	1,055	113 5.64	27 2.22	190 8.26	0	122 2.00	604 12.57	61 1.72	.4	393	51
30P1	7.1	1,960	1,466	208 10.38	23 1.89	230 10.00	0	84 1.38	886 18.45	78 2.20	.9	614	45
31Q1	6.8	1,150	752	54 2.69	12 0.99	175 7.61	0	86 1.41	428 8.91	41 1.16	.8	184	67
34N2	7.3	1,410	955	85 4.24	18 1.48	195 8.48	0	114 1.87	545 11.35	56 1.58	.8	286	60
35D1	7.1	1,190	794	65 3.24	24 1.97	155 6.74	0	114 1.87	449 9.35	45 1.27	.8	260	56

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
17/17-21N1	9013	Gardner, 1	1,005	R, G, 16	404	1,005	4-24-51	p 284.6	80	D	Irr	DWM	15	Clear.
21R1	8273	Airway Farms, 1		16			8- 4-51	p 294.0	82	D	Irr	DWM	15	Do.
23Q1	8499	H. W. Deavenport, 5	589	R, G	278	589	4-24-51	p 259.9	76	D	Irr	DWM	15	Do.
24P1	9277	7		R, G, 16					76	D	Irr	DWM	16	Do.
25N1	8854	Yraceburu	580	R, G, 14	360	580			76	D	Irr	DWM	15	Do.
27Q1	4693	Deavenport, 1	771	R, G, 16	312	771			77	D	Irr	DWM	15	Do.
27R1	8876	6	660	R, G, 16	300	660			77	D	Irr	DWM	15	Do.
28R1		San Joaquin Cotton Oil Co.	168							(6)	Ind	DWM	15	Do.
29N1	4046	Harnish Bros., 1	1,200	R, G, 16						(6)	Irr	DWM	15	Do.
29P1	8546	9	1,484	R, G, 16	445	1,300			77	D	Irr	DWM	15	Do.
30P1	4710	2	1,410	R, G, 16					77	D	Irr	DWM	15	Do.
31Q1	4247	R. Gilkey	1,569	16	600	1,951			85	50 ft	Irr	DWM	15	Do.
34N2	8408	P. W. McAvoy		16			8- 3-51	p 323.3	79	D	Irr	DWM	15	Do.
35D1		Producer's Five Points Gin.		8						(7)	Ind	DWM	15	Do.

See footnotes at end of table, page 575.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
17/17-35E1	6.9	1,740	1,269	160 7.98	23 1.89	200 8.70	0	78 1.28	787 16.38	60 1.69	1.1	494	47
35R1	7.0	1,300	875	70 3.49	28 2.30	170 7.39	0	116 1.90	499 10.39	51 1.44	.5	290	56
17/18-18N1	7.4	884	513	36 1.80	12 0.99	136 5.91	0	243 3.98	161 3.35	47 1.33	1.1	140	68
29N1	7.2	1,060	682	44 2.20	11 0.90	170 7.39	0	171 2.80	323 6.72	50 1.41	.6	155	70
33N1	7.2	994	619	40 2.00	12 0.99	154 6.70	0	193 3.16	273 5.68	44 1.24	1.1	150	69
34N1	7.3	799	526	23 1.15	2.7 0.22	150 6.52	0	293 4.80	173 3.60	32 0.90	1.1	68	83
35Q1	7.6	1,440	895	37 1.85	12 0.99	265 11.52	0	262 4.29	328 6.83	123 3.47	1.2	142	80
17/19-31N1	7.5	779	†460	10 0.50	0.7 0.06	168 7.31	0	368 6.03	----------	57 1.61	1.0	28	93
31P2	6.8	528	†290	5.7 0.28	1.5 0.12	112 4.87	0	218 3.57	----------	49 1.38	.6	20	92
18/15-2D1	7.5	3,060	1,400	275 13.72	173 14.23	245 10.65	0	143 2.34	1,360 28.31	208 5.87	1.2	1,400	28
24R1	7.3	3,550	†2,400	----------	----------	385 16.74	----------	130 2.13	*1,000 33.28	416 11.73	4.6	1,332	39
18/16-1E1	7.1	1,330	884	66 3.29	8.7 0.72	215 9.35	0	80 1.31	500 10.41	54 1.52	1.3	200	70
1N1	7.4	1,460	935	54 2.69	16 1.32	245 10.65	0	115 1.88	441 9.18	120 3.38	1.6	200	73
6D1	7.3	1,870	†1,300	----------	----------	285 12.39	0	123 2.02	761 15.84	74 2.09	2.7	355	64

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
17/17-35E1	4568	Yraceburu, 2	600	R, G, 16	240	600			76	D	Irr	DWM	15	Clear.
35R1	9015	3	722	R, G, 16	330	722	4-24-51	254.4	77	D	Irr	DWM	15	Do.
17/18-18N1	9159	Cooper		R, G, 14			4-24-51	p 152.0	72	D	Irr	DWM	17	Do.
29N1	8493	Joe Mather	636	R, G, 16			5- 1-51	p 173.63	76	D	Irr	DWM	16	Do.
33N1	8817	Hawkins, 6	663	16	350	592	5- 1-51	148.52	75	D	Irr	DWM	16	Do.
34N1	9100	Montgomery-O'Neill	804	R, G, 16	324	804	5- 1-51	p 181.8	76	D	Irr	DWM	16	Do.
35Q1	8469	Errataberry	395	R, G, 16	120	395	5- 1-51	103.87	70	D	Irr	DWM	16	Do.
17/19-31N1	8554	G. Dameron	600	14	160	600			70	D	Irr	DWM	16	Do.
31P2		do		8						B	S	DWM	16	Do.
18/15-2D1				8							Dom	DWM	14	Do.
24R1		Jordan	260	4½			4-26-51	215.66		B	Dom	DWM	14	Do.
18/16-1E1	9262	M. E. Willson, 6							86	55 ft		DWM	15	Do.
1N1	8494	4	1,821	R, G, 16	620	1,821	4-30-51	p 382.9	86	D	Irr	DWM	14	Do.
6D1	9185	W. Wright	2,093	R, G, 18	770	2,093			96	D	Irr	DWM	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Per-cent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
18/16-7N1	7.0	2,700	1,867	200 9.98	61 5.02	320 13.91	0	144 2.36	932 19.40	280 7.90	3.4	750	48
8P1	7.2	1,770	1,219	103 5.14	22 1.81	258 11.22	0	82 1.34	713 14.84	81 2.28	2.2	348	62
8R1	7.1	1,710	1,165	89 4.44	15 1.23	265 11.52	0	79 1.29	688 14.32	67 1.89	2.3	284	67
12K1	6.9	2,060	1,249	69 3.44	23 1.89	330 14.35	0	115 1.88	453 9.43	315 8.88	1.8	266	73
14N2	7.8	1,780	1,086	57 2.84	6.6 0.54	315 13.70	0	68 1.11	418 8.70	255 7.19	1.4	169	80
14R1	8.1	2,350	1,367	83 4.14	13 1.07	385 16.74	0	69 1.13	341 7.10	510 14.38	1.4	260	76
20N2	7.5	1,505	†1,000	----------	----------	204 8.87	----------	108 1.77	*550 11.44	116 3.27	1.3	330	57
21N1	7.3	1,435	†950	----------	----------	198 8.61	----------	108 1.77	*550 11.44	88 2.48	1.3	320	57
22K1	7.2	1,430	†950	----------	----------	236 10.26	----------	92 1.51	*450 9.36	128 3.61	1.2	200	72
22N1	7.3	1,290	†840	----------	----------	187 8.13	----------	70 1.15	*500 10.40	48 1.35	1.2	200	67
22Q2	7.3	1,280	†830	----------	----------	209 9.09	----------	64 1.05	*450 9.36	52 1.47	1.6	170	73
22R2	7.0	1,310	826	40 2.00	3.6 0.30	230 10.00	0	67 1.10	430 8.95	88 2.48	1.5	115	81
23Q1	7.1	1,600	991	52 2.59	12 0.99	280 12.18	0	72 1.18	416 8.66	195 5.50	1.3	179	77
24D1	7.4	1,860	1,309	111 5.54	90 7.40	172 7.48	0	136 2.23	782 16.28	87 2.45	.8	647	37

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
18/16-7N1	8385	Sunset Farms, 3	1,896	R, G, 16	576	1,896			84	D	Irr	DWM	14	Clear.
8P1	8544	5	1,875	R, G, 16	625	1,875			90	D	Irr	DWM	14	Do.
8R1	4701	Sunset Farms, 1	1,840	16	645	1,840	4-27-51	p 478.3	92	D	Irr	DWM	14	Do.
12K1	8945	M. E. Willson, 5		R, G, 16					86	D	Irr	DWM	14	Do.
14N2	9105	Harris, 16	1,904	R, G, 16	720	1,904			92	D	Irr	DWM	14	Do.
14R1	8620	1 A	2,000	R, G, 16			8- 4-51	p 460.4	93	D	Irr	DWM	14	Do.
20N2	9128	17		R, G, 16					89	D	Irr	DWM	14	Do.
21N1	8455	9	2,015	R, G, 16	616	2,015			86	D	Irr	DWM	14	Do.
22K1	4522	3	1,873	R, G, 16					89	D	Irr	DWM	14	Do.
22N1	9092	15	1,987	R, G, 16	680	1,987			88	D	Irr	DWM	14	Do.
22Q2	8571	10 A		R, G, 16			8- 4-51		89	D	Irr	DWM	14	Do.
22R2	9238	2 A							90		Irr	DWM	14	Do.
23Q1	8875	13	1,900	R, G, 16					90	D	Irr	DWM	14	Do.
24D1	8501	H & H Cotton Co		R, 8						(5)	Ind	DWM	14	Do.

See footnotes at end of table, page 575.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
18/16-24E1	7.1	3,170	1,782	135 6.74	19 1.56	490 21.31	0	60 0.98	301 6.27	805 22.70	1.5	415	72
24H1	6.9	1,810	1,067	56 2.79	23 1.89	292 12.70	0	114 1.87	370 7.70	269 7.59	1.4	234	73
24P1	7.2	1,590	†910	----------	----------	264 11.48	----------	94 1.54	*430 8.94	224 6.32	.9	220	72
25Q1	7.1	1,900	†1,100	----------	----------	297 12.91	----------	86 1.41	*450 9.36	288 8.12	1.1	340	65
26F2	7.7	1,300	823	48 2.40	15 1.23	210 9.13	0	94 1.54	405 8.43	98 2.76	1.3	182	72
30R1	7.3	1,680	†970	----------	----------	204 8.87	----------	104 1.71	*500 10.40	212 5.98	1.0	430	51
33Q1	8.3	1,280	†830	----------	----------	138 6.00	----------	126 2.07	---------	100 2.82	.8	340	47
34Q1	7.3	1.615	†1,100	----------	----------	170 7.39	----------	136 2.23	*600 12.48	92 2.59	.8	490	43
34R1	7.4	1,095	†690	----------	----------	143 6.22	----------	96 1.57	*400 8.32	56 1.58	1.0	230	57
35N1	7.2	1,805	†1,300	----------	----------	182 7.91	----------	122 2.00	*930 19.34	88 2.48	.9	660	37
18/17-3N1	6.8	2,090	1,511	161 8.03	62 5.10	230 10.00	0	99 1.62	915 19.05	94 2.65	.6	656	43
3Q1	7.3	1,910	1,071	28 1.40	2.2 0.18	368 16.00	0	199 3.26	219 4.56	355 10.01	1.2	79	91
4N1	6.4	1,250	782	47 2.35	15 1.23	195 8.48	0	99 1.62	389 8.10	87 2.45	.8	179	70
5B1	6.7	1,690	1,197	152 7.58	8.7 0.72	205 8.91	0	66 1.08	733 15.26	64 1.81	1.1	415	52

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
18/16-24E1	8250	Harris, 7	2,015	16			4-30-51	396.3	94	D	Irr	DWM	14	Clear.
24H1	1321	5		16	456				86	D	Irr	DWM	14	Do.
24P1	8771	11	2,000	R, G, 16					87	D	Irr	DWM	14	Do.
25Q1	8410	8							88	D	Irr	DWM	14	Do.
26F2	8981	14	1,814	R, G, 16			7-13-50	p 474	85	D	Irr	DWM	14	Do.
30R1	8765	12	2,024	R, G, 16	575	2,024			82	D	Irr	DWM	14	Do.
33Q1	8774	Sandell, 11	2,115	R, G, 16	595	2,115	8- 4-51	p 539	78	D	Irr	DWM	14	Do.
34Q1	4610	1	1,897	R, G, 16	450	1,897			78	D	Irr	DWM	14	Do.
34R1	4681	3	1,940	11						B	Dom	DWM	14	Do.
35N1	4681	10	2,025	R, G, 16	643	2,025			80	D	Irr	DWM	14	Do.
18/17-3N1	8782	P. W. McAvoy, 1	940	16	400	940	4-25-51	p 302.9		D	Irr	DWM	16	Do.
3Q1	8274	3		16						D	Irr	DWM	16	Do.
4N1	8558	J. E. O'Neil, 4	1,436	R, G, 16			4-26-51	323.3		D	Irr	DWM	16	Do.
5B1	1332	6		14					77	D	Irr	DWM	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
18/17-5K1	6.9	1,490	1,005	79 3.94	35 2.88	190 8.26	0	106 1.74	586 12.20	63 1.78	0.6	341	55
5N1	6.7	1,000	643	27 1.35	1.7 0.14	180 7.83	0	65 1.07	346 7.20	55 1.55	1.1	74	84
7E1	6.9	1,120	710	42 2.10	13 1.07	175 7.61	0	94 1.54	387 8.06	46 1.30	1.0	158	71
7L1	7.8	1,420	948	65 3.24	37 3.04	200 8.70	0	115 1.88	512 10.66	76 2.14	1.2	314	58
7N1	7.2	1,630	1,122	93 4.64	61 5.02	172 7.48	0	131 2.15	655 13.64	76 2.14	.9	483	44
7P1	7.0	1,450	979	71 3.54	44 3.62	195 8.48	0	126 2.06	540 11.24	66 1.86	1.0	358	54
8M1	7.1	1,200	767	39 1.95	14 1.15	180 7.83	0	102 1.67	405 8.43	78 2.20	1.0	155	72
8P1	7.2	1,390	860	45 2.25	17 1.40	205 8.91	0	109 1.79	421 8.76	117 3.30	1.3	182	71
11N1	7.3	1,200	709	24 1.20	0.2 0.02	230 10.00	0	122 2.00	258 5.37	136 3.84	1.2	61	89
12N1	6.9	1,080	699	32 1.60	0.2 0.02	225 9.78	0	74 1.21	357 7.43	48 1.35	1.0	81	86
13N1	7.1	1,290	870	64 3.19	22 1.81	195 8.48	0	118 1.93	469 9.76	62 1.75	.8	250	63
13Q1	7.0	1,030	656	29 1.45	8.0 0.66	190 8.26	0	90 1.47	321 6.68	63 1.78	1.2	106	80
14E1	7.3	1,070	619	30 1.50	3.9 0.32	160 6.96	0	96 1.57	301 6.27	76 2.14	1.0	91	79
15E1	6.8	1,090	651	34 1.70	6.8 0.56	165 7.17	0	92 1.51	329 6.85	70 1.97	1.3	113	76

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
18/17-5K1	4140	J. E. O'Neil, 2 A	1,495	16	837	1,377	8- 4-51	p 372.6	81	D	Irr	DWM	15	Clear.
5N1	4385	3	1,400	16	400	1,400			87	D	Irr	DWM	15	Do.
7E1	8243	11	m 1,340	R, G, 16			11-29-50	355.4	86	D	Irr	DWM	14	Do.
7L1	8861	13	1,660	R, G, 16	586	1,688			84	D	Irr	DWM	14	Do.
7N1	1269	8	804	16	529	790			81	75 ft	Irr	DWM	14	Do.
7P1	1334	10		16			8- 4-51	p 420.5	84	D	Irr	DWM	14	Do.
8M1	9271	15	1,625	16	637	1,625			86	D	Irr	DWM	17	Do.
8P1	9099	14	1,782	R, G, 16	671	1,782			85	D	Irr	DWM	17	Do.
11N1	3705	F. C. Diener, 1	1,600	18	700	1,600				D	Irr	DWM	16	Do.
12N1	8658	8	1,540	R, G, 16	690	1,552	5- 2-51	266.7		D	Irr	DWM	16	Do.
13N1	4615	5	1,790	R, G, 16	500	1,790	5- 2-51	266.7		D	Irr	DWM	16	Do.
13Q1	9291	9								D	Irr	DWM	16	Do.
14E1	1335	7	m 1,750	16	700	1,750	5- 2-51	304.1	85	D	Irr	DWM	17	Do.
15E1	3934	3	1,600	R, G, 16	600	1,703	8- 3-51	p 417.8	84	D	Irr	DWM	17	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
18/17-15N1	7.3	1,170	711	27 1.35	44 0.36	180 7.83	0	115 1.88	268 5.58	134 3.78	1.2	86	82
17E1	6.9	1,050	655	29 1.45	5.6 0.46	165 7.17	0	73 1.20	377 7.85	41 1.16	1.0	96	79
18R1	6.8	1,280	808	48 2.40	22 1.81	175 7.61	0	93 1.52	448 9.33	68 1.92	1.0	210	64
19P1	7.3	1,525	†1,000	----------	----------	154 6.70	----------	120 1.97	*700 14.56	68 1.92	.7	480	41
20H1	6.7	1,580	973	66 3.29	43 3.54	165 7.17	0	130 2.13	514 10.70	120 3.38	1.4	342.	51
20N1	6.8	2,100	1,498	126 6.29	93 7.65	230 10.00	0	126 2.06	853 17.76	134 3.78	.8	697	42
18N1	7.0	2,120	1,355	83 4.14	57 4.69	292 12.70	0	127 2.08	565 11.76	294 8.29	1.3	442	59
22P1	7.1	1,400	799	34 1.70	8.7 0.72	220 9.57	0	138 2.26	277 5.77	190 5.36	1.5	121	80
23E1	7.0	1,210	704	27 1.35	2.9 0.24	195 8.48	0	109 1.79	278 5.79	146 4.12	1.4	80	84
24N2	7.1	1,620	922	22 1.10	15 1.23	285 12.39	0	178 2.92	254 5.29	256 7.22	1.6	116	84
25M1	7.0	1,350	770	23 1.15	1.9 0.16	258 11.22	0	153 2.51	196 4.08	214 6.04	1.9	66	90
27J1	7.2	2,410	1,788	166 8.28	101 8.31	255 11.09	0	124 2.03	1,090 22.69	114 3.22	1.2	830	40
28N1	7.1	1,360	863	54 2.69	31 2.55	194 8.44	0	122 2.00	436 9.08	87 2.45	1.0	262	62
30P1	7.4	2,170	†1,300	----------	----------	297 12.91	----------	126 2.07	*750 15.60	296 8.35	1.1	610	51

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
18/17-15N1	8457	F. C. Diener, 2	1,800	16			4-26-51	201.26	87	D	Irr	DWM	17	Clear.
17E1	4131	R. Thomas, 6	1,801	R, G, 16			4-26-51	373.4	88	D	Irr	DWM	17	Do.
18R1	4201	4	1,500	R, G, 16	462	1,500				(3)	Irr	DWM	17	Do.
19P1	8783	13		R, G, 16					82	50 ft	Irr	DWM	14	Do.
20H1	3768	8	1,789	R, G, 16					82	D	Irr	DWM	17	Do.
20N1	8239	12	m 1,825	R, G, 16						D	Irr	DWM	16	Sandy.
18N1	8242	Harris, 6	2,080	R, G, 16	500	2,080	8- 4-51	p 428.5	86	D	Irr	DWM	14	Clear.
22P1	8320	M. E. Willson, 3	1,835	R, G, 16	638	1,835	4-26-51	p 357.4	88	D	Irr	DWM	17	Do.
23E1	3843	F. C. Diener, 6	1,750	16	400	1,750	5- 2-51	324.0	86	D	Irr	DWM	17	Do.
24N2	9055	Calflax, 4 A	1,893	R, G, 16	684	1,873				D	Irr	DWM	16	Do.
25M1	8557	13	2,088	16	614	2,088	5- 2-51	323.7		D	Irr	DWM	16	Do.
27J1		San Joaquin Cotton Oil Co., Lassen Ave. Gin.	700	10	350	700				B	Irr	DWM	17	Do.
28N1	9056	Benson, 3		R, G, 16	500	2,209				D	Irr	DWM	16	Do.
30P1	8178	1	1,995	R, G, 16	502	1,995	4-26-51	p 451.2	83	D	Irr	DWM	14	Do.
31N1	8381	Calflax, 23	m 2,050	R, G, 16	550	2,194	4-26-51	p 448.9	86	D	Irr	DWM	14	Do.

See footnotes at end of table, page 575.

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TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
18/17-31N1	7.3	1,525	†1,000	----------	----------	214 9.31	----------	108 1.77	*1,000 20.80	136 3.84	1.0	310	60
33N1	7.1	2,650	1,537	78 3.89	34 2.80	435 18.92	0	159 2.61	361 7.52	550 15.51	1.2	334	74
34E1	7.0	1,860	1,080	40 2.00	20 1.64	330 14.35	0	215 3.52	262 5.45	320 9.03	1.9	182	80
34G1	7.4	2,010	1,459	126 6.29	96 7.89	205 8.91	0	126 2.06	874 18.20	96 2.71	.7	709	39
35H1	6.8	1,310	825	54 2.69	30 2.47	182 7.91	0	145 2.38	400 8.33	88 2.48	.6	258	61
35N1	7.2	1,660	992	50 2.50	26 2.14	265 11.52	0	192 3.15	326 6.79	228 6.43	1.8	232	71
36N1	6.7	2,240	1,660	149 7.44	119 9.79	205 8.91	0	122 2.00	1,020 21.24	107 3.02	.6	862	34
36Q1	7.1	1,610	899	29 1.45	10 0.82	292 12.70	0	189 3.10	186 3.87	288 8.12	1.4	114	85
18/18-2Q1	7.2	605	†340	14 0.70	1.2 0.10	128 5.57	0	286 4.69	----------	43 1.21	1.7	40	87
3N1	7.2	980	617	38 1.90	6.6 0.54	160 6.96	0	196 3.21	276 5.75	38 1.07	1.1	122	74
5K1	7.0	1,390	916	69 3.44	22 1.81	200 8.70	0	129 2.11	487 10.14	74 2.09	.9	262	62
5Q1	7.1	1,080	721	43 2.15	10 0.82	175 7.61	0	151 2.47	367 7.64	51 1.44	1.1	148	72
7M1	7.4	1,140	710	50 2.50	14 1.15	164 7.13	0	125 2.05	377 7.85	43 1.21	.2	182	66
7N1	7.1	1,260	831	65 3.24	25 2.06	172 7.48	0	125 2.05	454 9.45	53 1.49	.1	265	59

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
18/17-33N1	8396	Calflax, 25	m 2,052	R, G, 16	500	2, 209	4-26-51	394. 8		D	Irr	DWM	16	Clear.
34E1	4371	10	2, 017	16	408	2, 017				D	Irr	DWM	16	Do.
34G1	8853	11 A		R, G, 16			5- 2-51	p 395. 6		D	Irr	DWM	16	Do.
35H1	9101	1 A	1, 849	R, G, 16	697	1, 849				D	Irr	DWM	16	Do.
35N1	8339	26	2, 025	R, G, 16	550	2, 025				D	Irr	DWM	16	Do.
36N1	8670	12 A	1, 911	R, 16	609	1, 911	5- 2-51	157. 7		D	Irr	DWM	16	Do.
36Q1	8280	9	1, 985	R, G, 16			5- 2-51	327. 9		D	Irr	DWM	16	Do.
18/18-2Q1	9234	Hayes		R. G, 14					73	D	Irr	DWM	16	Do.
3N1	8541	Hawkins, 4	626	R, G, 16	333	597	5- 2-51	p 196. 15		30 ft	Irr	DWM	16	Do.
5K1	8957	A. Schleicher	652	R, G, 16	342	643				D	Irr	DWM	16	Do.
5Q1	8587	do	637	R, G, 16	326	632				D	Irr	DWM	16	Do.
7M1	8301	Hawkins, 3		R, G, 16			5- 2-51	227. 46		D	Irr	DWM	16	Do.
7N1	4606	1	1. 200	16			5- 2-51	p 266. 75		D	Irr	DWM	16	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
18/18-7Q1	6.9	1,410	944	75 3.74	37 3.04	182 7.91	0	112 1.84	535 11.14	60 1.69	0.6	339	54
7R1	6.8	1,330	896	68 3.39	24 1.97	170 7.39	0.	104 1.70	530 11.03	52 1.47	1.2	268	58
9N1	6.8	1,220	791	54 2.69	21 1.73	170 7.39	0	121 1.98	440 9.16	46 1.30	.8	221	63
14Q1	6.6	1,480	1,064	121 6.04	7.0 0.58	200 8.70	0	57 0.93	657 13.68	50 1.41	1.0	331	57
19N1	6.9	1,140	697	41 2.05	3.6 0.30	175 7.61	0	116 1.90	347 7.22	72 2.03	1.0	118	76
22Q1	7.0	1,200	788	51 2.54	14 1.15	190 8.26	0	135 2.21	431 8.97	36 1.02	.7	184	69
23N1	7.1	1,120	719	43 2.15	5.8 0.48	190 8.26	0	146 2.39	365 7.60	43 1.21	.9	132	76
24N1	6.6	1,470	747	74 3.69	6.3 0.52	230 10.00	0	112 1.84	268 9.74	114 3.22	.8	210	70
24Q1	6.8	3,780	3,281	474 23.65	77 6.33	420 18.26	0	56 0.92	2,160 44.97	120 3.38	2.3	1,500	38
29N1	8.2	1,220	757	28 1.40	13 1.07	234 10.18	0	152 2.49	268 5.58	138 3.89	1.3	124	80
31P1	8.4	1,580	1,129	87 4.34	89 7.32	188 8.17	10 0.33	120 1.97	622 12.95	74 2.09	.6	583	41
32N2	8.6	1,260	805	48 2.40	17 1.40	200 8.70	0 0.27	112 1.84	402 8.37	82 2.31	1.2	190	70
33E1	8.9	1,090	680	30 1.50	2.7 0.22	205 8.91	12 0.40	108 1.77	288 6.00	88 2.48	1.1	86	84
33N1	8.5	1,770	1,263	111 5.54	64 5.26	200 8.70	8 0.27	112 1.84	749 15.59	76 2.14	.6	540	45

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
18/18-7Q1	4697	Hawkins, 2	1,314	R, G, 16			5- 2-51	199.90		D	Irr	DWM	16	Clear.
7R1	9203	7	640		305	609	5- 2-51	p 236.6		D	Irr	DWM	16	Do.
9N1	8542	5	638	R, G, 16	336	625	5- 2-51	p 233.3		D	Irr	DWM	16	Do.
14Q1	9135	Perreira and Hamblin		R, G, 14			5- 1-51	p 188.09	74	D	Irr	DWM	16	Do.
19N1	8927	Calflax, 5 A	m 1,722	R, G, 16	628	1,714				D	Irr	DWM	16	Do
22Q1	9175	R. McDaniel								D	Irr	DWM	16	Do.
23N1	8812	Bizieff Bros	840	16					78	D	Irr	DWM	16	Do.
24N1	9104	O. R. Duty	500	R, G					76	D	Irr	DWM	16	Do.
24Q1				6			5- 1-51	65.89		(5)	S	DWM	16	Do.
29N1	8454	Calflax, 2 A	1,934	R, G, 16	550	1,934	5- 2-51	p 378.5	87	D	Irr	PRW	15	Do.
31P1	4037	7 A	1,977	R, G, 16	380	1,977			79	D	Irr	PRW	15	Do.
32N2	9107	J. Barlow		R, G, 16					84	D	Irr	PRW	15	Do.
33E1	9108	P. C. Barlow		R, G, 16					87	D	Irr	PRW	15	Do.
33N1	4696	do	1,825	R, 18	363	1,825			76	D	Irr	PRW	15	Do.

See footnotes at end of table, page 575.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
18/18-34E1	7.3	1,040	655	23 1.15	12 0.99	170 7.39	0	32 0.52	380 7.91	54 1.52	0.7	107	78
35N1	7.7	1,250	720	24 1.20	2.2 0.18	230 10.00	0	205 3.36	196 4.08	165 4.65	1.8	69	88
36D1	6.9	1,140	732	48 2.40	8.5 0.70	170 7.39	0	120 1.97	398 8.29	48 1.35	1.0	155	70
36N1	6.9	1,230	822	55 2.74	17 1.40	180 7.83	0	110 1.80	472 9.83	44 1.24	.7	207	65
36N2	6.8	1,100	693	44 2.20	5.1 0.42	180 7.83	0	131 2.15	357 7.43	41 1.16	1.3	131	75
18/19-5K1	8.8	583	338	5.2 0.26	0.5 0.04	136 5.91	24 0.80	253 4.15	8.2 0.17	38 1.07	1.2	15	95
5N1	8.6	4,500	3,266	50 2.50	110 9.05	910 39.57	19 0.63	290 4.75	1,730 36.02	320 9.03	2.6	578	77
5Q1	8.6	447	256	2.4 0.12	0.5 0.04	102 4.44	11 0.37	192 3.15	8.2 0.17	36 1.02	.8	8	97
6G1	8.2	958	561	17 0.85	2.9 0.24	200 8.70	0	293 4.80	105 2.19	92 2.57	.9	54	89
6Q2	8.2	881	525	19 0.95	1.9 0.16	186 8.09	0	331 5.42	95 1.98	59 1.66	1.5	56	88
6R1	8.5	2,160	1,421	42 2.10	35 2.88	395 17.18	9 0.30	276 4.52	655 13.64	147 4.15	2.2	249	78
7H1	8.4	780	438	8.0 0.40	1.9 0.16	162 7.04	6 0.20	236 3.87	67 1.39	76 2.14	1.3	28	93
8E1	8.5	829	473	7.2 0.36	1.5 0.12	170 7.39	8 0.27	212 3.47	97 2.02	85 2.40	.9	24	94
8K2	7.0	1,360	889	103 5.14	52 4.28	130 5.65	0	365 5.98	352 7.33	72 2.03	.3	471	37

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
18/18-34E1	4460	R. Polder							76	(5)	Dom	PRW	15	Milky. Well started for sample.
35N1	4525	R. S. Barlow	1,760	16	316	1,725			85	D	Irr	PRW	15	Clear.
36D1	8548	P. C. Barlow		14					78	D	Irr	PRW	15	Do.
36N1	9273	R. S. Barlow	880	14					76	D	Irr	PRW	15	Brownish, some mud.
36N2	8958	do		R. G, 16					81	D	Irr	PRW	15	Clear; sulfur odor.
18/19-5K1	4266								66	D	Irr	PRW	15	Brown cast.
5N1	4262	Louis P. Alves							67	D	Irr	MEC	15	Clear.
5Q1	None	Mary Alves		8						(5)	Dom	PRW	15	Clear; sulfur odor.
6G1	8886	H. I. Brown	432	R, 16			5- 3-51	94.5	68	D	Irr	PRW	15	Clear.
6Q2	Diesel	J. Morgan		R, G, 16			5- 3-51	102.4	70	D	Irr	PRW	15	Slight yellow cast.
6R1	4263	Howard Del		G					68	D	Irr	PRW	15	Clear.
7H1	8705	W. W. King		14					68	20 ft	Irr	MEC	15	Do.
8E1	8830	L. H. Goldman		14					67	D	Irr	MEC	15	Light yellowish brown.
8K2	8983	Graeber		12					66	D	Irr	PRW	15	Clear.

See footnotes at end of table, page 575.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
18/19-8K3	7.1	1,670	1,116	109 5.44	62 5.10	190 8.26	0	364 5.97	461 9.60	115 3.24	0.4	527	44
8Q1	6.9	1,860	1,269	131 6.54	81 6.66	170 7.39	0	341 5.59	617 12.85	102 2.88	.5	660	36
8M1	8.3	682	396	8.8 0.44	1.2 0.10	150 6.52	0	280 4.59	40 0.83	57 1.61	1.0	27	92
19N1	8.5	932	561	30 1.50	2.7 0.22	170 7.39	9 0.30	259 4.24	168 3.50	52 1.47	1.6	86	81
20M1	8.5	694	396	14 0.70	1.5 0.12	142 6.17	9 0.30	291 4.77	48 1.00	37 1.04	1.7	41	88
21N1	8.6	692	440	10 0.50	2.2 0.18	158 6.87	18 0.60	323 5.29	56 1.17	35 0.99	1.7	34	91
21H1	7.4	1,070	613	5.6 0.28	1.5 0.12	245 10.65	0	526 8.62	6.6 0.14	94 2.65	1.4	20	96
22M1	7.1	538	298	5.2 0.26	1.2 0.10	110 4.78	0	222 3.64	26 0.54	47 1.33	.7	18	93
27D1	7.3	921	523	11 0.55	2.7 0.22	190 8.26	0	275 4.51	95 1.98	88 2.48	1.3	38	91
27N1	7.4	1,220	767	12 0.60	6.1 0.50	265 11.52	0	383 6.28	221 4.60	72 2.03	2.2	55	91
28Q1	7.3	812	487	13 0.65	2.2 0.18	175 7.61	0	378 6.19	79 1.64	30 0.85	2.1	42	90
30Q1	8.2	1,130	678	46 2.30	3.9 0.32	170 7.39	0	217 3.56	267 5.56	82 2.31	1.6	131	74
19/16-1N1	6.9	2,340	1,730	150 7.49	135 11.10	205 8.91	0	146 2.39	1,050 21.86	118 3.33	.8	930	32
2N1	6.7	2,400	1,786	158 7.88	138 11.35	215 9.35	0	140 2.29	1,090 22.69	116 3.27	.8	962	33

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
18/19-8K3	1353	Graeber	54	10					65	D	Irr	PRW	15	Clear.
8Q1	1353	do		10					65	D	Irr	PRW	15	Do.
8M1	9172	W. W. King							68	S	Irr	MEC	15	Brown.
19N1	8839	Samuel Borges		14			5- 3-51	193.5	77	D	Irr	MEC	15	Clear.
20M1	9096	Manuel Vierra		12			5- 3-51	122.5	74	D	Irr	MEC	15	Brown.
21N1	9148	C. F. Costa and Sons		R, G, 12			5- 4-51	p 114	75	D	Irr	MEC	15	Muddy, pumping sand.
21H1	9211	R. A. Rowan Co		R, G, 16					78	D	Irr	PRW	15	Milky.
22M1	3700			8						(8)	Dom	PRW	15	Clear.
27D1	2521	J. B. Collum	440	14			5- 3-51	101.3	68	D	Irr	PRW	15	Clear, yellow cast.
27N1	2613	do	440	14					74	D	Irr	PRW	15	Reddish-brown cast.
28Q1	9166	G. Loyd	400	R, G, 16	200	400			73	D	Irr	PRW	15	Clear, yellow cast.
30Q1	8549	T. M. McClain	810	R, G, 14			5- 5-51	167.6	78	D	Irr	PRW	15	Clear; sulfur odor.
19/16-1N1	8371	Calflax, 22	m 1,908	R, G, 16	550	2,045	5- 1-51	380.6	77	D	Irr	PRW	14	Clear.
2N1	1256	Sandell, 4		R, G, 14			5- 1-51	327.1		D	Dom	PRW	14	Do.

See footnotes at end of table, page 575.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
19/16-2N2	7.2	2,400	1,797	158 7.88	138 11.35	220 9.57	0	144 2.36	1,090 22.69	120 3.38	1.0	962	33
10G1	6.7	1,720	1,163	99 4.94	80 6.58	165 7.17	0	136 2.23	658 13.70	94 2.65	.7	576	38
11N1	8.5	1,710	1,200	98 4.89	73 6.00	190 8.26	10 0.33	106 1.74	690 14.37	86 2.43	1.1	544	43
11P1	7.2	1,640	1,128	85 4.24	72 5.92	175 7.61	0	138 2.26	650 13.53	78 2.20	.4	508	43
12N1	6.7	1,280	829	44 2.20	23 1.89	195 8.48	0	87 1.43	465 9.68	58 1.64	1.1	204	67
15Q1	8.6	1,710	1,138	72 3.59	50 4.11	230 10.00	18 0.60	118 1.93	614 12.78	95 2.68	1.4	385	56
22G1	8.6	1,640	1,063	54 2.69	17 1.40	275 11.96	12 0.40	132 2.16	528 10.99	110 3.10	1.6	204	75
23P1	8.3	1,670	1,181	73 3.64	74 6.09	195 8.48	0	134 2.20	696 14.49	76 2.14	1.2	486	47
25E1	8.4	2,530	1,933	150 7.49	160 13.16	230 10.00	0	162 2.65	1,190 24.77	122 3.44	1.2	1,030	33
25N1	8.2	2,500	1,940	153 7.63	152 12.50	235 10.22	0	180 2.95	1,190 24.77	120 3.38	1.3	1,010	34
30D1	9.1	1,700	1,101	18 0.90	4.6 0.38	355 15.44	31 1.03	142 2.33	542 11.28	79 2.23	1.6	64	92
35N1	8.0	2,070	1,557	99 4.94	105 8.63	235 10.22	0	160 2.62	930 19.36	108 3.05	1.0	678	43
35Q1	8.1	2,180	1,612	119 5.94	118 9.70	220 9.57	0	176 2.88	947 19.72	120 3.38	1.4	782	38
19/17-5E1	7.9	2,340	1,415	83 4.14	33 2.71	395 17.18	0	100 1.64	395 8.22	460 12.97	.8	342	71

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
19/16-2N2	8216	Sandell, 5	2,085	R. G, 16	478	2,085			78	D	Irr	PRW	14	Clear.
10G1	4626	2		R. G, 16					80	D	Irr	PRW	14	Do.
11N1	8355	Calflax, 20	2,043	R, G, 16	550	2,043	5- 1-51	392	79	D	Irr	PRW	14	Do.
11P1	8677	27	1,960	R, G, 16	649	1,960			79	D	Irr	PRW	14	Do.
12N1	8405	Sandell, 7	2,204	R, G, 16	592	2,204			87	D	Irr	PRW	14	Do.
15Q1	8267	6	2,090	R, G, 16	560	2,090			87	D	Irr	PRW	14	Do.
22G1	8644	9	2,048	R, G, 16	618	2,048			93	D	Irr	PRW	14	Do.
23P1	8601	8	2,137	R, G, 16	660	2,137			81	D	Irr	PRW	14	Do.
25E1	8531	Giffen Inc., 37		R, G, 16			8- 3-51	p 462.6	77	D	Irr	PRW	14	Do.
25N1	8532	36		R, G, 16			5- 1-51	329.4	76	D	Irr	PRW	14	Do.
30D1	Diesel	Standard Oil Co		R			4-30-51	p 379.4		D	Ind	PRW	14	Do.
35N1	8533	Giffen Inc., 41	m 1,980	R, G, 16					79	D	Irr	PRW	14	Do.
35Q1	8534	42		R, G, 16			12-14-50	p 431.0	77	D	Irr	PRW	14	Do.
19/17-5E1	9282	Calflax, 29		R, G ,16					89	D	Irr	PRW	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
19/17-2K1	8.6	1,150	755	48 2.40	29 2.38	157 6.83	10 0.33	130 2.13	398 8.29	49 1.38	0.8	239	59
2N1	8.4	1,170	733	40 2.00	26 2.14	178 7.74	8 0.27	146 2.39	337 7.02	70 1.97	1.6	207	65
3N1	8.2	2,030	1,502	127 6.34	109 8.96	188 8.17	0	160 2.62	907 18.88	92 2.59	.9	765	35
4N2	8.1	1,700	1,192	87 4.34	73 6.00	199 8.65	0	146 2.39	663 13.80	98 2.76	.9	517	46
5N1	8.2	1,640	1,141	90 4.49	72 5.92	175 7.61	0	154 2.52	649 13.51	79 2.23	.7	520	42
6A1	7.8	2,470	1,520	84 4.19	46 3.78	405 17.61	0	142 2.33	459 9.56	455 12.83	1.2	398	69
6P1	8.1	2,000	1,445	110 5.49	92 7.57	215 9.35	0	120 1.97	869 18.09	100 2.82	.8	653	42
8E1	8.2	2,510	1,622	117 5.84	76 6.25	330 14.35	0	120 1.97	645 13.43	395 11.14	1.0	604	54
8P1	8.1	2,390	1,824	154 7.68	145 11.92	215 9.35	0	150 2.46	1,120 23.32	116 3.27	.6	980	32
9N1	8.2	1,610	1,126	87 4.34	72 5.92	175 7.61	0	158 2.59	639 13.30	75 2.12	.7	513	43
11N1	8.2	1,660	1,027	50 2.50	39 3.21	262 11.39	0	226 3.70	357 7.43	207 5.84	1.1	286	67
13N1	6.9	1,370	919	69 3.44	58 4.77	145 6.31	0	158 2.59	513 10.68	56 1.58	.6	410	43
14Q1	6.6	2,490	1,813	166 8.28	142 11.68	215 9.35	0	131 2.15	1,090 22.69	135 3.81	.6	998	32
15N1	6.8	1,670	1,084	71 3.54	61 5.02	195 8.48	0	178 2.92	528 10.99	140 3.95	1.0	428	50

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
19/17-2K1	8726	Calflax, 14	m 1,650	R, G, 16	600	1,850			84	D	Irr	PRW	15	Clear.
2N1	8645	15	m 1,806	R, G, 16					86	D	Irr	PRW	15	Do.
3N1	8391	O'Neill Farms, 3	1,935	16			5- 1-51	331.1	78	D	Irr	PRW	15	Do.
4N2	9035	5		R, G, 16			5- 1-51	p 483.4	81	D	Irr	PRW	15	Do.
5N1	8399	Calflax, 24 A	1,907	16	702	1,907	5- 1-51	410.9	81	D	Irr	PRW	15	Do.
6A1	8535	R. Thomas, 2	2,100	R, G, 14					86	D	Irr	PRW	15	Do.
6P1	8536	3	m 2,150	R, G, 16	593				85	D	Irr	PRW	15	Do.
8E1	8772	4		R, G, 16					85	D	Irr	PRW	15	Do.
8P1	8643	O'Neill Farms, 4		16			5- 1-51	363.3	80	D	Irr	PRW	15	Do.
9N1	8351	1	1,930	R, G, 16	550	1,930	5- 1-51	p 452.9	80	D	Irr	PRW	15	Do.
11N1	8398	Giffen Inc., 23	2,153	16	606	2,153			85	D	Irr	PRW	14	Do.
13N1	8388	24	2,170	16	606	2,170	5- 1-51	350.9	81	D	Irr	PRW	15	Do.
14Q1	8357	H-4	m 1,645	16	503	2,050	5- 1-51	p 268.9	76	D	Irr	PRW	15	Do.
15N1	8353	H-3	2,050	16	518	2,050	5- 1-51	p 436.4	83	D	Irr	PRW	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
19/17-19D1	8.4	1,730	1,223	91 4.54	87 7.15	172 7.48	0	160 2.62	716 14.91	78 2.20	0.8	584	39
19N1	7.3	2,500	1,880	154 7.68	167 13.73	170 7.39	0	150 2.46	1,190 24.77	125 3.53	.0	1,070	26
19P1	7.1	2,380	1,786	142 7.09	155 12.75	200 8.70	0	160 2.62	1,090 22.69	120 3.38	.0	992	30
21N1	7.4	2,100	1,533	125 6.24	123 10.12	175 7.61	0	156 2.56	925 19.26	108 3.05	.0	818	32
22N1	7.2	1,880	1,314	109 5.44	100 8.22	160 6.96	0	157 2.57	780 16.24	88 2.48	.0	683	34
23N1	8.2	1,830	1,173	63 3.14	58 4.77	245 10.65	0	202 3.31	500 10.41	207 5.84	.0	396	57
23P1	7.0	1,490	1,02[1]	81 4.04	41 3.37	155 6.74	0	148 2.43	616 12.82	55 1.55	.0	370	48
24N1	7.6	2,540	1,526	42 2.10	33 2.71	530 23.05	0	340 5.57	247 5.14	507 14.30	.8	240	83
26M1	6.9	1,580	1,100	81 4.04	82 6.74	150 6.52	0	163 2.67	650 13.53	57 1.61	.0	539	38
27N1	7.2	1,810	1,320	105 5.24	98 8.06	165 7.17	0	164 2.69	789 16.43	82 2.31	.0	665	35
28N1	8.2	2,330	1,743	142 7.09	140 11.51	205 8.91	0	164 2.69	1,060 22.07	115 3.24	.0	930	32
29N1	7.1	2,600	2,071	162 8.08	155 12.75	320 13.91	0	175 2.87	1,220 25.40	128 3.61	.0	1,040	40
30E1	7.9	2,660	2,083	166 8.28	164 13.49	245 10.65	0	168 2.75	1,300 27.06	125 3.53	.2	1,090	33
30N1	7.2	2,660	2,040	146 7.29	150 12.34	295 12.83	0	196 3.21	1,230 25.61	122 3.44	.5	982	40

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
19/17-19D1	9048	Giffen Inc., 48	2,063	R, G, 16	721	2,063	5- 1-51	366.0	79	D	Irr	PRW	15	Clear.
19N1	8492	46	2,080	R, G, 16	654	2,080	5- 1-51	350.2	78	D	Irr	PRW	14	Do
19P1	8697	47	2,030	R, G, 16	665	2,030			78	D	Irr	PRW	14	Do.
21N1	8344	H-1	2,090	R, G, 16	499	2,090	8- 3-51	p 467.6	79	D	Irr	PRW	14	Do.
22N1	8345	H-2	2,074	16	464	2,074	5- 1-51	251.1	79	D	Irr	PRW	14	Do.
23N1	8387	19	2,164	R, G, 16	606	2,164	5- 1-51	p 427.5	84	D	Irr	PRW	14	Do.
23P1		San Joaquin Cotton Oil Co., Westhaven Gin.	722	R, 10						(2)	Ind	PRW	14	Do.
24N1	8433	Giffen Inc., 27	2,136	16	611	2,136	8-19-50	p 411.7	91	D	Irr	PRW	14	Do.
26M1	8356	6	m 1,970	16	596	2,134	11-29 50	379.1	82	D	Irr	PRW	14	Do.
27N1	8375	10	2,130	16	608	2,130	5- 2-51	p 437.4	78	D	Irr	PRW	14	Yellow cast.
28N1	8378	16	2,130	R, G, 16	587	2,130	5- 2-51	p 414.9	79	D	Irr	PRW	14	Clear.
29N1	8372	13	2,135	R, G, 16	571	2,135	5- 2-51	344.9	76	D	Irr	PRW	14	Do.
30E1	9873	49	2,015	R, G, 16	725	2,015			78	D	Irr	PRW	14	Do.
30N1	8491	32		R, G, 16			5- 1-51	331.0	75	D	Irr	PRW	14	Do.

See footnotes at end of table, page 575.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
19/17-31E1	7.3	2,620	2,005	150 7.49	145 11.92	285 12.39	0	202 3.31	1,200 24.98	125 3.53	0.5	970	39
31N1	8.2	2,720	2,105	142 7.09	132 10.86	355 15.44	0	256 4.20	1,220 25.40	128 3.61	1.6	898	46
32N1	7.4	2,760	2,138	170 8.48	169 13.90	265 11.52	0	180 2.95	1,300 27.06	145 4.09	.2	1,120	34
33N1	7.9	2,340	1,715	129 6.44	140 11.51	200 8.70	0	171 2.80	1,050 21.86	112 3.16	.0	898	33
34N1	7.1	1,600	1,139	83 4.14	85 6.99	170 7.39	0	172 2.82	655 13.64	61 1.72	.0	556	40
35N1	7.3	1,550	1,102	85 4.24	95 7.81	160 6.96	0	160 2.62	627 13.05	56 1.58	.0	602	37
36E1	8.4	1,490	1,023	77 3.84	66 5.43	160 6.96	0	157 2.57	683 12.14	60 1.69	.8	464	43
36N1	8.0	1,500	1,040	79 3.94	69 5.67	160 6.96	0	167 2.74	594 12.37	56 1.58	.7	480	42
19/18-2H1	6.9	1,060	670	39 1.95	1.7 0.14	180 7.83	0	139 2.28	351 7.31	30 0.85	1.0	104	79
2H2	6.6	1,340	914	71 3.54	4.4 0.36	215 9.35	0	97 1.59	547 11.39	28 0.79	1.1	195	71
4G1	8.6	1,300	770	32 1.60	7.0 0.58	238 10.35	16 0.53	154 2.52	235 4.89	165 4.65	1.4	109	83
7N1	7.5	1,920	1,124	48 2.40	28 2.30	340 14.78	0	228 3.74	275 5.73	319 9.00	1.6	235	76
11N1	7.3	1,480	845	17 0.85	2.2 0.18	300 13.05	0	253 4.15	171 3.56	228 6.43	1.8	52	93
15M1	7.6	2,000	1,127	40 2.00	14 1.15	350 15.22	0	293 4.80	222 4.62	355 10.01	1.6	158	83

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
19/17-31E1	8490	Giffen Inc., 31		R, G, 16			5- 1-51	334.5	76	D	Irr	PRW	14	Clear.
31N1	8354	5	2,101	R, G, 16	609	2,101	5- 1-51	324	75	D	Irr	PRW	14	Do.
32N1	8346	3	2,084	R, G, 16	608	2,084			76	D	Irr	PRW	14	Do.
33N1	8342	2	2,092	R, G, 16	620	2,092	5- 1-51	358.0	77	D	Irr	PRW	14	Do.
34N1	8380	17	m 2,000	16	602	2,131	5- 1-51	383.7	80	D	Irr	PRW	14	Do.
35N1	8347	4	2,204	16	640	2,204			82	D	Irr	PRW	14	Do.
36E1	8190	1	2,051	16	500	2,051			80	D	Irr	PRW	14	Do.
36N1	8394	22	2,139	16	508	2,139	5- 2-51	p 444	80	D	Irr	PRW	14	Do.
19/18-2H1	8769	R. S. Barlow	940	14			4-30-51	215.5	79	D	Irr	PRW	15	Slightly milky.
2H2	8769	do	800	R, G, 14					79	D	Irr	PRW	15	Clear.
4G1	8498	R. Polder		R, G, 16			5- 5-51	260	85	D	Irr	PRW	15	Do.
7N1	8944	Boston Land Co., 69	2,109	R, G, 16	700	2,010	8- 2-51	p 423.8	88	D	Irr	PRW	15	Do.
11N1	9237	80		R, G, 16					91	D	Irr	PRW	15	Do.
15M1	9012	73	2,110	R, G, 16	700	2,005	5- 1-51	279.6	90	D	Irr	PRW	15	Do.

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TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
19/18-18N1	6.6	1,720	1,190	93 4.64	71 5.84	190 8.26	0	144 2.36	683 14.22	82 2.31	1.0	524	44
19N1	7.5	2,210	1,678	146 7.29	111 9.13	265 11.52	0	129 2.11	983 20.47	109 3.07	.6	821	41
20D1	6.9	1,750	1,036	36 1.80	21 1.73	320 13.91	0	215 3.52	251 5.23	300 8.46	1.7	176	80
20N1	7.9	1,390	927	70 3.49	41 3.37	175 7.61	0	131 2.15	515 10.72	61 1.72	.8	343	53
23D2	6.8	1,650	918	23 1.15	4.6 0.38	320 13.91	0	233 3.82	151 3.14	303 8.55	1.6	76	90
23N1	8.2	1,160	732	38 1.90	12 0.99	190 8.26	0	137 2.25	359 7.47	66 1.86	.8	144	74
26N1	8.0	1,700	951	19 0.95	4.6 0.38	340 14.78	0	302 4.95	127 2.64	310 8.74	1.0	66	92
26P1	7.9	1,970	1,272	75 3.74	41 3.37	330 14.35	0	200 3.28	489 10.18	237 6.68	1.2	356	67
28E1	8.5	2,180	1,204	34 1.70	18 1.48	390 16.96	9 0.30	262 4.29	181 3.77	441 12.44	1.5	159	84
29N1	8.0	2,090	1,477	125 6.24	101 8.31	200 8.70	0	147 2.41	879 18.30	100 2.82	.7	728	37
31M1	7.7	1,512	1,027	77 3.84	64 5.26	160 6.96	0	156 2.56	589 12.26	60 1.69	.6	455	43
33N2	7.9	1,370	912	68 3.39	33 2.71	175 7.61	0	131 2.15	517 10.76	54 1.52	.6	305	56
35D1	8.0	1,490	----	7.2 0.36	2.2 0.18	----	0	541 8.87	----	----	----	27	
36N1	8.5	1,540	898	20 1.00	16 1.32	320 13.91	9).30	276 4.52	132 2.75	264 7.45	1.2	116	86

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
19/18-18N1	8995	Boston Land Co., 56	2,008	R, G, 16	700	2,010			79	D	Irr	PRW	15	Clear.
19N1	8585	Giffen Inc., 43	m1,925	R, G, 16					76	D	Irr	PRW	14	Do.
20D1	9011	Boston Land Co., 12	2,112	R, G, 16	700	2,005	8- 2-51	p 431.0	88	D	Irr	PRW	15	Do.
20N1	8994	55	1,999	R, G, 16	703	1,999			79	D	Irr	PRW	14	Do.
23D2	9091	78	2,110	R, G, 16	700	2,030	4-30-51	261.6	88	D	Irr	PRW	15	Do.
23N1	8996	8	2,060	18	900	2,060			82	D	Irr	PRW	14	Do.
26N1	8953	44	2,030	16					92	D	Irr	PRW	14	Milky; sulfur odor.
26P1	8966	50	2,002	18	720	1,990	8- 2-51	p 329.9	83	D	Irr	PRW	14	Clear.
28E1	8931	70	2,110	R, G, 16	700	2,010	5- 1-51	310.4	90	D	Irr	PRW	14	Do.
29N1	8584	Giffen, Inc., 44		16					79	D	Irr	PRW	14	Do.
31M1	8439	26	m1,910	16	606	2,148	8- 3-51	457.7	79	D	Irr	PRW	14	Do.
33N2	8776	Boston Land Co., 68	2,025	R, G, 16	632	2,025	8-25-50	332.9	79	D	Irr	PRW	14	Do.
35D1	8986	10	2,250	17	800	2,250			89	D	Irr	PRW	14	Cloudy, yellowish; sulfur odor.
36N1	9020	74	2,110	R, G, 16	700	2,005			88	D	Irr	PRW	14	Clear.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
19/19-4G1	7.1	1,340	833	46 2.30	6.3 0.52	245 10.65	0	348 5.70	275 5.73	88 2.48	1.7	141	79
6N1	7.0	1,040	655	39 1.95	5.3 0.44	175 7.61	0	179 2.93	301 6.27	45 1.27	1.3	120	76
21N1	6.0	2,820	2,541	569 28.39	4.9 0.40	200 8.70	0	15 0.25	1,710 35.60	50 1.41	1.0	1,440	23
21R1	6.2	1,920	1,432	170 8.48	2.7 0.22	285 12.39	0	17 0.28	935 19.47	30 0.85	1.4	435	59
15N1	8.4	1,320	819	36 1.80	5.6 0.46	255 11.09	0	291 4.77	268 5.58	110 3.10	1.7	113	83
22D1	7.7	1,150	698	33 1.65	4.1 0.34	200 8.70	0	325 5.33	216 4.50	74 2.09	1.3	100	81
24N1	6.6	7,010	5,110	713 35.58	49 4.03	960 41.74	0	47 0.77	1,940 40.39	1,420 40.05	4.7	1,980	51
25H1	8.3	3,480	2,385	65 3.24	19 1.56	770 33.48	5 0.17	296 4.85	1,040 21.65	338 9.53	2.0	240	87
26J1	8.5	1,890	1,192	65 3.24	12 0.99	355 15.44	9 0.30	279 4.57	444 9.24	178 5.02	1.2	212	78
30B1	7.8	1,320	837	54 2.69	3.2 0.26	230 10.00	0	188 3.08	380 7.91	75 2.12	2.2	148	77
30B2	8.5	1,190	707	22 1.10	1.2 0.10	235 10.22	10 0.33	264 4.33	189 3.93	117 3.30	3.1	60	89
34Q1	8.4	1,220	816	56 2.79	5.1 0.42	205 8.91	6 0.20	190 3.11	420 8.74	29 0.82	1.1	160	74
20/16-1D1	8.1	2,640	1,994	141 7.04	133 10.94	300 13.05	0	224 3.67	1,180 24.57	128 3.61	1.7	899	42
1E1	8.1	2,770	2,069	146 7.29	130 10.69	340 14.78	0	256 4.20	1,190 24.77	135 3.81	2.3	899	45

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
19/19-4G1	8974	Collum, 1	800	R, G, 14					76	S	Irr	PRW	15	Clear.
6N1	9139	L. C. Barlow		R, G, 16					80	D	Irr	PRW	15	Greenish cast.
21N1	Wind			4					73	D	S	PRW	14	Clear.
21R1	Wind	Lemen		6			4-30-51	58.1	77	D	S	PRW	14	Do.
15N1	3720			R, G, 14			4-30-51	200	79	D	Irr	PRW	14	Cloudy.
22D1	3719			R, G, 14					78	D	Irr	PRW	14	Do.
24N1	2860			6			4-30-51	118.7		B	Dom	PRW	14	Clear.
25H1		Lane		6					75	200 ft	Dom	PRW	14	Do.
26J1	2585		857	R, G, 16					73	D	Irr	PRW	14	Do.
30B1	8732	H. I. Black	1,250	R, G	600	1,250			86	D	Ind	PRW	14	Do.
30B2	8733	do		R, 16	600	1,250			87	D	Irr	PRW	14	Light yellowish cast; sulfur odor.
34Q1	3640	Harnish Bros., 6	900	R, G, 16	424	900	8- 2-51	p 231.1	79	D	Irr	PRW	14	Clear.
20/16-1D1	8512	Giffen Inc., 35		R, G, 16			5-?-51	318.9	75	D	Irr	PRW	14	Do.
1E1	8496	34		R, G, 16					73	D	Irr	PRW	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
20/16-2R1	7.9	3,120	1,080	169 8.43	161 13.24	375 16.31	0	292 4.79	1,410 29.35	168 4.74	2.5	1,080	43
3R1	8.1	1,940	1,344	84 4.19	74 6.09	235 10.22	0	154 2.52	770 16.03	104 2.93	1.5	514	50
4P1	7.9	1,940	1,310	67 3.34	32 2.63	310 13.48	0	92 1.51	737 15.34	117 3.30	1.6	298	69
4P2	2.9	3,910	2,830	209 10.43	222 18.26	320 13.91	0	0 0	1,840 38.31	238 6.71	1.0	1,430	32
4P2	8.2	3,200	2,508	169 8.43	215 17.68	320 13.91	0	144 2.36	1,520 31.64	212 5.98	1.4	1,310	35
4P2	6.3	3,310	2,628	186 9.28	220 18.09	320 13.91	0	22 0.36	1,670 34.77	220 6.20	1.2	1,370	34
21L1	8.8	2,390	1,590	52 2.59	9.2 0.76	460 20.00	24 0.80	126 2.06	831 17.30	150 4.23	1.6	168	86
36Q1	8.8	1,360	878	41 2.05	10 0.82	230 10.00	16 0.53	96 1.57	487 10.14	46 1.30	1.0	144	78
20/17-1E1	7.3	1,460	1,010	73 3.64	63 5.18	160 6.96	0	152 2.49	584 12.16	55 1.55	.6	441	44
1N1	7.1	1,440	988	74 3.69	58 4.77	170 7.39	0	161 2.64	556 11.58	51 1.44	.8	423	47
2N1	7.1	1,520	1,054	76 3.79	74 6.09	160 6.96	0	169 2.77	606 12.62	55 1.55	.5	494	41
3N1	8.4	1,600	1,129	83 4.14	85 6.99	166 7.22	6 0.20	167 2.74	647 13.47	59 1.66	1.3	556	39
4E1	8.4	2,190	1,594	129 6.44	124 10.20	200 8.70	0	168 2.75	948 19.74	108 3.05	1.6	832	34
5E1	8.2	2,760	2,141	170 8.48	150 12.34	300 13.05	0	166 2.72	1,300 27.06	138 3.80	1.4	1,040	39

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
20/16-2R1	8495	Giffen, Inc., 33		R, G, 16			8- 3-51	p 418.6	72	D	Irr	PRW	14	Clear.
3R1	8699	Sandell, 12		R, G, 16					85	S	Irr	PRW	14	Do.
4P1		Shell Oil Co., Caliola 1	1,152				9-24-50	315		(9)	Irr	PRW	14	Do.
4P2		Caliola 2	823				9-24-50	226	83	T	Ind	PRW	14	Rusty yellow.[10]
									83	T		PRW	14	Rusty.
									77	T		PRW	14	Clear.
21L1	8919	Pleasant Valley Farms		R, 12			4- 1-51	p 175	87	D	Irr	PRW	14	Do.
36Q1	8558	A. M. O'Neill, 4	1,500	R, G, 16			5- 1-51	p 477.8	84	D	Irr	PRW	14	Do.
20/17-1E1	8480	Giffen Inc., 30	m1,865	16			8- 3-51	p 488.0		D	Irr	MEC	15	Do.
1N1	8468	29	m2,100	16					80	D	Irr	MEC	15	Do.
2N1	8393	20	2,148	R, G, 16	606	2,148	8-23-50	p 407.7	78	D	Irr	MEC	22	Do
3N1	8374	15	2,040	16	608	2,126	5- 4-51	372.3	79	D	Irr	MEC	15	Do.
4E1	8350	7	2,130	R, G, 16	608	2,130	8-26-50	p 446.2	76	D	Irr	MEC	15	Do.
5E1	8373	9	m2,060	R, G, 16	600	2,125			74	D	Irr	MEC	15	Do.

See footnotes at end of table, page 575.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
20/17-5N1	8.3	2,900	2,207	182 9.08	172 14.14	280 12.18	0	172 2.82	1,350 28.11	137 3.86	1.4	1,160	34
6N1	8.2	3,310	2,575	162 8.08	176 14.47	410 17.83	0	189 3.10	1,560 32.48	172 4.85	2.3	1,130	44
8E1	8.3	2,460	1,854	146 7.29	134 11.02	250 10.87	6 0.20	179 2.93	1,120 23.32	109 3.07	1.4	916	37
9E1	8.4	2,060	1,478	121 6.04	110 9.05	180 7.83	5 0.17	161 2.64	884 18.40	98 2.76	1.3	754	34
9N1	7.1	1,730	1,221	94 4.69	85 6.99	175 7.61	0	178 2.92	708 14.74	71 2.00	.8	584	39
9R1	7.9	1,840	1,308	105 5.24	88 7.24	190 8.26	0	171 2.80	764 15.91	77 2.11	.8	624	40
10C1	7.1	1,580	1,106	83 4.14	73 6.00	170 7.39	0	162 2.65	640 13.32	60 1.69	.8	507	42
11E1	7.2	2,800	2,104	188 9.38	156 12.83	270 11.74	0	146 2.39	1,290 26.86	128 3.61	.8	1,110	35
11N1	7.1	1,380	900	63 3.14	50 4.11	160 6.96	0	158 2.59	505 10.51	44 1.24	.7	362	49
13B1	7.0	1,580	1,110	87 4.34	57 4.69	190 8.26	0	137 2.25	642 13.37	67 1.89	.8	452	48
14N1	7.1	1,890	1,359	106 5.29	93 7.65	200 8.70	0	142 2.33	808 16.82	82 2.31	.7	647	40
14P1	7.1	1,520	1,042	85 4.24	62 5.10	175 7.61	0	145 2.38	599 12.47	50 1.41	.8	467	45
14P2	7.0	1,360	923	70 3.49	43 3.54	170 7.39	0	142 2.33	527 10.97	43 1.21	.7	352	51
16E1	8.1	1,580	1,114	83 4.14	77 6.33	174 7.57	0	180 2.95	634 13.20	57 1.61	.8	524	42

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
20/17-5N1	8359	Giffen Inc., 8	2,120	R, G, 16	607	2,120	5- 4-51	335.7	75	D	Irr	MEC	15	Clear.
6N1	8383	Pasajero Farms, 1		R, G, 16			5- 4-51	315.4	71	D	Irr	MEC	15	Do.
8E1	8407	Giffen Inc., 21	2,120	R, G, 16	610	2,120	5- 4-51	p 362.7	74	D	Irr	MEC	15	Do
9E1	8366	14	1,992	16	591	1,992	5- 4-51	p 396.3	77	D	Irr	MEC	15	Do.
9N1	8330	9	1,995	16	584	1,995			77	D	Irr	MEC	22	Do.
9R1	8365	11	2,145	R, G, 16	600	2,145			76	D	Irr	MEC	22	Do.
10G1	8364	12	2,150	16	546	2,150	8- 3-51	p 445.1	76	D	Irr	MEC	15	Do.
11E1	1347	Mouren		14			5- 4-51	p 232.6	73	D		MEC	15	Do.
11N1	8173	A. M. O'Neill, Huron Development Co.	1,921	16	478	1,921	8- 3-51	p 479.6	82	D	PS	MEC	15	Do.
13B1	1176	Vista del Llano, H-3	1,734	16	449				77	D	Irr	MEC	15	Do.
14N1	1165	A. M. O'Neill, 1	1,500	16			5- 2-51	p 401.6	75	S	Irr	MEC	15	Do.
14P1	1194	2		16			4-25-51	301.0	77	S	Irr	MEC	15	Clear; organic matter from standpipe.
14P2	9126	2	2,114	R, G, 16	730	2,114			81	D	Irr	MEC	22	Clear.
16E1	8384	Giffen Inc., 18	m1,095	16	605	2,132	8- 3-51	p 437.6	76	D	Irr	MEC	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
20/17-17N1	7.3	1,880	1,360	117 5.84	98 8.06	190 8.26	0	156 2.56	792 16.49	86 2.43	0.7	695	37
18N1	8.4	2,330	1,727	162 8.08	130 10.69	200 8.70	0	166 2.72	1,030 21.44	123 3.47	.9	938	32
19N1	7.2	1,480	1,004	85 4.24	65 5.35	160 6.96	0	158 2.59	576 11.99	40 1.13	.6	480	42
19P1	7.8	1,480	1,024	84 4.19	68 5.59	156 6.78	0	162 2.65	578 12.03	58 1.64	.9	489	41
22D1													
22D2	6.9	1,770	1,261	101 5.04	85 6.99	190 8.26	0	152 2.49	742 15.45	68 1.92	.8	602	41
23E1	7.2	1,670	1,182	94 4.69	74 6.09	182 7.91	0	159 2.61	690 14.37	64 1.81	.8	539	42
23J1	7.1	1,330	893	73 3.64	37 3.04	160 6.96	0	128 2.10	515 10.72	45 1.27	.7	334	51
26A1	7.1	1,310	887	73 3.64	47 3.87	140 6.09	0	142 2.33	518 10.78	39 1.10	.9	376	45
26C1	7.8	1,250	803	61 3.04	36 2.96	138 6.00	0	138 2.26	459 9.56	41 1.16	.5	300	50
26H1	6.8	1,240	821	67 3.34	31 2.55	150 6.52	0	120 1.97	472 9.83	42 1.18	.6	294	53
28E1	8.1	1,270	872	67 3.34	54 4.44	150 6.52	0	170 2.79	481 10.01	36 1.02	.7	389	46
29E1	8.4	1,390	957	85 4.24	59 4.85	150 6.52	5 0.17	156 2.56	530 11.03	51 1.44	.5	454	42
29N1	8.5	1,250	760	85 4.24	48 3.96	130 5.65	9 0.30	158 2.59	370 7.70	40 1.13	.5	410	41

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
20/17-17N1	8427	Giffen Inc., 25	2,152	R, G, 16	606	2,152	8- 3-51	p 428.6	75	S	Irr	MEC	14	Clear.
18N1	8412	Morshead and Allen	2,100	R, G, 16	1,200	2,100	8- 3-51	p 412.7	76	S	Irr	MEC	15	Do.
19N1	8575	Giffen Inc., 39		R, G, 16			8- 3-51	p 464.6	77	D	Irr	MEC	14	Do.
19P1	9081	50	2,011	R, G, 16					77	D	Irr	MEC	14	Do.
22D1	1250	Thomas-Giffen	1,919	R, G, 16	455	1,919			75	D	Irr	MEC	15	Do.
22D2	1323	do	1,331	16	398	1,331	5- 4-51	285.2	74	D	Irr	MEC	15	Do.
23E1	1164	Vista del Llano, H-1	m1,750	16	401	2,055			74	D	Irr	MEC	15	Do.
23J1	1174	H-2	1,637	16	443	1,637	8-24-50	p 395.7	77	D	Irr	MEC	15	Do.
26A1	1197	H-4	1,904	16	400	1,904	8-24-50	p 360.4	76	D	Irr	MEC	15	Do.
26C1	9279	H-11		R, G, 16					81	D	Irr	MEC	15	Do.
26H1	1286	H-7	1,921	16	406	1,921	5- 4-50	381.8	80	D	Irr	MEC	15	Do.
28E1	8602	Thomas-Giffen, 6	1,821	R, G, 16	603	1,821	5- 4-51	344.0	77	D	Irr	MEC	14	Do.
29E1	8540	Giffen, Inc., 40		R, G, 16			5- 4-51	376.7	77	D	Irr	MEC	14	Do.
29N1	8511	38	m2,000	R, G, 16					76	D	Irr	MEC	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
20/17-30Q1	8.4	1,600	900	117 5.84	67 5.51	162 7.04	6 0.20	182 2.98	398 8.29	60 1.69	0.5	568	38
31M1	8.9	1,320	861	34 1.70	6.1 0.50	235 10.22	18 0.60	101 1.66	476 9.91	42 1.18	.7	110	82
31N1	8.9	1,470	898	34 1.70	8.5 0.70	285 12.39	21 0.70	127 2.08	430 8.95	56 1.58	.6	120	84
32Q1	8.5	1,150	702	72 3.59	40 3.29	120 5.22	8 0.27	140 2.29	364 7.58	29 0.82	.4	344	43
33N1	8.6	1,120	809	71 3.54	34 2.80	125 5.44	10 0.33	129 2.11	477 9.93	28 0.79	.5	317	46
34D1	7.4	1,110	728	56 2.79	27 2.22	150 6.52	0	132 2.16	400 8.33	30 0.85	1.0	250	57
34M1	8.5	1,070	715	52 2.59	29 2.38	148 6.44	0	148 2.43	385 8.02	28 0.79	0.6	248	56
35D1	7.8	1,210	809	66 3.29	46 3.78	140 6.09	0	140 2.29	459 9.56	28 0.79	1.0	354	46
35N1	7.1	1,040	692	61 3.04	35 2.88	120 5.22	0	156 2.56	377 7.85	22 0.62	.4	296	47
36C1	7.0	1,250	800	69 3.44	34 2.80	125 5.44	0	118 1.93	474 9.87	40 1.13	.8	312	47
36D1	6.8	1,240	793	73 3.64	40 3.29	130 5.65	0	118 1.93	458 9.54	34 0.96	.6	346	45
36E1	8.0	1,140	773	73 3.64	36 2.96	125 5.44	0	129 2.11	446 9.29	29 0.82	.5	330	45
20/18-5N1	6.9	1,310	889	61 3.04	38 3.12	175 7.61	0	141 2.31	496 10.33	50 1.41	.9	308	55
6N1	7.4	1,330	899	66 3.29	40 3.29	170 7.39	0	146 2.39	499 10.39	52 1.47	.8	329	53

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
20/17-30Q1	1167	A. M. O'Neill, Polvadero 10	m 840	R, G, 16					72	S	Irr	MEC	14	Clear.
31M1	8212	Mauldin, 2	2,075	R, G, 16	516	2,075			86	S	Irr	MEC	14	Do.
31N1	8160	1	2,007	R, G, 16					86	S	Irr	MEC	14	Do.
32Q1	1275	Thomas-Giffen, 2	1,900	R, G, 16	440	1,900			77	D	Irr	MEC	14	Do.
33N1	8411	5	2,090	R, G, 16	606	2,090	5- 4-51	p 445.8	78	S	Irr	MEC	14	Do.
34D1	9129	Sommerville		R, G, 16					80	D	Irr	MEC	14	Do.
34M1	8406	Thomas-Giffen, 4	2,056	16	600	2,056	11-30-50	p 410.4	79	D	Irr	MEC	14	Do.
35D1	1320	Vista del Llano, H-9	m1,400	16	467	2,014			78	S	Irr	MEC	14	Do.
35N1		San Joaquin Cotton Oil Co								B	Ind	MEC	15	Cloudy, pumping sand.
36C1	1237	S. and V. Thomas, 2	1,940	16	425	1,940			80	S	Irr	MEC	15	Clear.
36D1	2241	1	m1,181	18	435	2,092			78	D	Irr	MEC	15	Do.
36F1	9014	3	1,776	14			2- 6-51	p 374.2	79	D	Irr	MEC	15	Do.
20/18-5N1	8409	Giffen, Inc., 28	m2,090	R, G, 16	608	2,134	8- 3-51	p 464.2	82	D	Irr	MEC	15	Do.
6N1	8664	45	2,063	R, G, 16	601	2,063	5- 4-51	376.0	81	D	Irr	MEC	15	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
20/18-9M1	6.8	1,140	740	44 2.20	22 1.81	170 7.39	0	136 2.23	391 8.14	46 1.30	0.9	200	65
11N1	7.7	1,380	799	21 1.05	6.6 0.54	262 11.39	0	236 3.87	196 4.08	196 5.53	1.6	80	88
14N1	7.3	1,430	865	36 1.80	16 1.32	250 10.87	0	178 2.92	309 6.43	165 4.65	1.4	156	78
16G1	6.8	1,140	755	48 2.40	23 1.89	165 7.17	0	133 2.18	407 8.47	46 1.30	.7	214	63
19D1	7.1	1,200	791	54 2.69	20 1.64	175 7.61	0	118 1.93	436 9.08	48 1.35	.7	216	64
20A1	6.8	6,630	5,619	537 26.80	374 30.76	810 35.22	0	134 2.20	3,390 70.58	440 12.41	2.2	2,288	38
20G1	6.9	1,260	823	54 2.69	20 1.64	180 7.83	0	124 2.03	458 9.54	50 1.41	.8	216	64
20Q1	6.9	1,090	710	44 2.20	12 0.99	170 7.39	0	124 2.03	379 7.89	44 1.24	.7	160	70
22M1	8.8	1,080	689	41 2.05	11 0.90	170 7.39	12 0.40	144 2.36	353 7.35	30 0.85	1.2	148	71
23N1	7.8	1,060	655	34 1.70	11 0.90	170 7.39	0	158 2.59	298 6.20	63 1.78	1.3	130	74
24D1	7.9	1,770	1,019	25 1.25	16 1.32	350 15.22	0	284 4.65	151 3.14	336 9.48	1.4	128	86
25D1	7.5	1,980	1,124	33 1.65	10 .82	375 16.31	0	250 4.10	181 3.77	400 11.28	1.5	124	87
27D1	8.4	1,120	718	43 2.15	16 1.32	170 7.39	0	124 2.03	387 8.06	41 1.16	.9	174	68
28E1	7.3	1,050	659	39 1.95	9.2 0.76	165 7.17	0	116 1.90	347 7.22	42 1.18	.8	136	73

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
20/18-9M1	8397	Woods, 1		R, G, 16			5- 4-51	p 433.9	83	S	Irr	MEC	15	Clear.
11N1	8514	Boston Land Co., 57	2,010	R, G, 16	600	2,030	5- 4-51	325.1	89	S	Irr	MEC	14	Do.
14N1	8519	58	m2,030	R, G, 16	600	2,040			85	D	Irr	MEC	14	Do.
16G1	8603	Woods, 2	1,813	R, G, 16			5- 4-51	p 433.6	82	S	Irr	MEC	15	Do.
19D1	8171	Vista del Llano, H-10	2,044	16	495	2,044			81	D	Irr	MEC	15	Do.
20A1	Wind	Airway Farms								(11)	S	MEC	15	Clear with organic matter from open tank.
20G1	8691	Airway Farms, 3	2,011	R, G, 16	600	2,011	8-25-50	p 458.3	83	D	Irr	MEC	15	Clear.
20Q1	9001	4	2,106	R, G, 16					83	D	Irr	MEC	15	Do.
22M1	9022	5		R, G, 16			5- 4-51	p 483.0	84	D	Irr	MEC	14	Do.
23N1	8520	Boston Land Co., 59	2,010	R, G, 16	600	2,005	5- 4-51	p 408.6	85	S	Irr	MEC	14	Do.
24D1	8565	63	2,012	R, G, 16	600	2,005			91	D	Irr	MEC	14	Do.
25D1	8567	62	2,014	R, G, 16	600	2,005	5- 4-51	304.2	91	S	Irr	MEC	14	Do.
27D1	8518	60	2,010	R, G, 16	594	2,005			82	D	Irr	MEC	14	Do.
28E1	8529	Airway Farms, 2	1,857	R, G, 16	515	1,857			82	D	Irr	MEC	14	Do.

See footnotes at end of tables, page 575.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
20/18-29N1	7.1	1,170	760	53 2.64	19 1.56	170 7.39	0	112 1.84	415 8.64	48 1.35	0.6	210	64
30E1	6.9	1,280	863	73 3.64	26 2.14	170 7.39	0	110 1.80	492 10.24	48 1.35	1.0	289	56
33E1	7.7	1,170	769	66 3.29	17 1.40	162 7.04	0	104 1.70	433 9.01	40 1.13	.9	234	60
35D1	8.9	989	638	26 1.30	6.6 0.54	175 7.61	10 0.60	90 1.47	337 7.02	30 0.85	1.2	92	81
36D1	8.7	943	610	29 1.45	5.6 0.46	165 7.17	12 0.40	124 2.03	305 6.35	31 0.87	1.1	96	79
20/19-6N1	7.4	1,480	879	21 1.05	2.2 0.18	310 13.48	0	257 4.21	180 3.75	237 6.68	1.5	62	92
7N1	7.1	1,410	809	22 1.10	3.6 0.30	275 11.96	0	225 3.69	186 3.87	210 5.92	1.5	70	90
12C1	8.4	1,390	901	48 2.40	7.3 0.60	265 11.52	0	418 6.85	315 6.56	58 1.64	1.3	150	79
12M1	8.8	1,240	762	18 0.90	3.2 0.26	275 11.96	35 1.17	404 6.62	156 3.25	75 2.12	1.3	58	91
13B1	8.7	2,100	1,574	113 5.64	18 1.48	375 16.31	24 0.80	170 2.79	910 18.95	48 1.35	2.2	356	70
13G1	8.0	1,010	639	26 1.30	2.7 0.22	200 8.70	0	298 4.88	236 4.91	26 0.73	1.1	76	85
13L1	8.2	1,400	918	37 1.85	6.3 0.52	295 12.83	0	434 7.11	318 6.62	46 1.30	1.9	118	84
14J1	8.2	1,500	1,068	105 5.24	4.1 0.34	245 10.65	0	260 4.26	548 11.41	36 1.02	1.4	279	66
19D1	7.8	1,590	932	25 1.25	9.5 0.78	320 13.91	0	284 4.65	165 3.44	271 7.64	1.3	102	87

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
20/18-29N1	8369	Prouty and Giovenetti	2,121	R, G, 16	546	2,121			81	D	Irr	MEC	15	Clear.
30E1	1310	Vista del Llano, H-8	2,082	16	464	2,082			79	D	Irr	MEC	15	Do.
33E1	8450	Halfmoon Fruit Co	2,109	R, G, 16			4-24-51	p 402.4	81	S	Irr	MEC	14	Do.
35D1	8586	Shannon, 2	2,000	R, G, 16	700	2,000			84	S	Irr	MEC	14	Do.
36D1	8244	Wolfsen	1,400	16			5- 4-51	274.2	80	D	Irr	MEC	14	Do.
20/19-6N1	8570	Shannon, 6	2,018	R, G, 16	600	2,010			88	S	Irr	MEC	15	Do.
7N1	8569	5	2,029	R, G, 16	600	2,005			88	S	Irr	MEC	15	Yellowish white.
12C1	3394	Fabry		R, G, 16					73	D	Irr	MEC	14	Do.
12M1	3859	Westlake Farms		R, G, 16					75	D	Irr	MEC	14	Do.
13B1	2531	Fabry	1,000	16						D	Irr	MEC	14	Clear.
13G1	1187	do					5- 4-51	p 126.45	71	D	Dom	MEC	14	Do.
13L1		do		16					73	D	Irr	MEC	14	Yellowish white.
14J1	3004	Harnish Bros	1,070	R, G, 16	475	1,070			73	D	Irr	MEC	14	Clear.
19D1	8566	Boston Land Co., 64	2,016	R, G, 16	600	2,005	8- 2-51	p 353.0	90	S	Irr	MEC	14	Do.

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TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
20/18-19N1	7.8	1,720	976	22 1.10	7.0 0.58	350 15.22	0	300 4.92	114 2.37	334 9.42	1.3	84	90
23D1	8.5	1,170	723	23 1.15	4.1 0.34	235 10.22	0	392 6.42	206 4.29	60 1.69	1.6	74	87
25C1	8.0	1,390	806	23 1.15	6.6 0.54	295 12.83	0	616 10.10	39 0.81	138 3.89	1.4	84	88
25D1	8.2	1,510	908	21 1.05	12 0.99	330 14.35	0	600 9.83	81 1.68	167 4.71	1.2	102	88
25A1	8.0	1,100	713	21 1.05	12 0.99	220 9.57	0	232 3.80	321 6.68	24 0.68	1.2	102	82
25R1	7.9	1,010	643	8.0 0.40	12 0.99	215 9.35	0	292 4.79	240 5.00	23 0.65	1.1	70	87
26B1	8.9	1,230	692	13 0.65	7.5 0.62	255 11.09	41 1.37	368 6.03	16 0.33	178 5.02	1.0	64	90
26Q1	8.0	1,210	667	16 0.80	5.6 0.46	235 10.22	0	366 6.00	40 0.83	189 5.33	1.0	63	89
20/20-19E3	7.9	1,040	648	20 1.00	3.2 0.26	200 8.70	0	259 4.23	271 5.64	26 0.73	.6	63	87
19E4	8.6	1,020	658	23 1.15	3.6 0.30	205 8.91	18 0.60	254 4.16	257 5.35	25 0.71	1.0	72	86
30C1	8.1	1,330	776	20 1.00	16 1.32	285 12.39	0	678 11.11	4.1 0.09	116 3.27	1.1	116	84
21/17-1D1	7.1	1,060	686	59 2.94	31 2.55	124 5.39	0	130 2.13	380 7.91	28 0.79	.8	274	50
5M1	8.6	1,800	1,152	56 2.79	25 2.06	320 13.91	11 0.37	140 2.29	527 10.97	144 4.06	.8	242	74
5N1	8.9	1,540	968	36 1.80	9.5 0.78	295 12.83	22 0.73	124 2.03	477 9.93	68 1.92	.8	129	83

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					Remarks
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	
20/19-19N1	8840	Boston Land Co., 71		R, G, 16	700	2,005			92	S	Irr	MEC	14	Clear.
23D1	2753	Harnish Bros., 3	1,275	R, G, 18	722	1,275			79	D	Irr	MEC	14	Clear with yellow tint.
25C1	3321	Westlake Farms, D-3		R, G, 16					80	D	Irr	MEC	14	Yellowish white.
25D1	3320	D-2		R, G, 16					81	D	Irr	MEC	14	Do.
25A1	2220	Garman	500							(12)	Dom	MEC	14	Clear.
25R1	2942	Newton Bros	492						80	(3)	Dom	MEC	14	Do.
26B1	3319	Westlake Farms, D-1		16			5- 4-51	187.2	83	D	Irr	MEC	14	Yellowish white.
26Q1	3655	D-4		R, G, 18			5- 4-51	186.61		D	Irr	MEC	14	Do.
20/20-19E3	2457								71	D	Irr	MEC	14	Muddy; some sand.
19E4	2457									P	Dom	MEC	14	Clear.
30C1	Gas	Newton Farms, 1	1,653	R, 16					80	(13)	Irr	MEC	14	Clear with gas.
21/17-1D1	8799	Thomas, 6	1,824	R, G, 16	616	1,824			80	S	Irr	MEC	14	Clear.
5M1	8240	Mauldin, 3	2,088	16	430	2,088	8-25-50	375.4	84	D	Irr	MEC	14	Cloudy.
5N1	8226	4		R, G, 16					88	D	Irr	MEC	14	Clear.

See footnotes at end of tables, page 575.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
21/17-5P1	8.3	1,270	938	52 2.59	22 1.81	215 9.35	0	144 2.36	543 11.30	35 0.99	0.8	220	68
6N2	8.6	1,720	943	58 2.89	17 1.40	300 13.05	11 0.37	120 1.97	352 7.33	146 4.12	.8	214	75
10D1	8.8	1,530	948	29 1.45	5.3 0.44	300 13.05	21 0.70	103 1.69	487 10.14	53 1.49	2.1	94	87
11E1	8.2	1,100	876	71 3.54	33 2.71	132 5.74	0	137 2.25	545 11.35	28 0.79	.9	312	48
13N1	8.4	1,070	756	58 2.89	28 2.30	135 5.87	0	136 2.23	435 9.06	33 0.93	.5	260	53
21/18-1D1	8.7	891	570	28 1.40	2.7 0.22	165 7.17	13 0.43	85 1.39	281 5.85	38 1.07	.3	81	82
2M1	8.5	1,020	646	32 1.60	5.8 0.48	170 7.39	14 0.47	90 1.47	336 7.00	44 1.24	.4	104	78
3A1	9.1	997	644	20 1.00	10 0.82	175 7.61	20 0.67	84 1.38	349 7.27	29 0.82	.5	91	81
3B1	8.9	1,030	677	46 2.30	9.2 0.76	160 6.96	16 0.53	80 1.31	369 7.68	38 1.07	.8	153	69
4D1	8.1	1,200	806	72 3.59	19 1.56	168 7.31	0	100 1.64	453 9.43	45 1.27	.7	258	59
5D1	7.2	1,380	946	107 5.34	43 3.54	148 6.44	0	106 1.74	550 11.45	46 1.30	.9	444	42
5D2	7.6	1,330	931	95 4.74	45 3.70	146 6.35	0	116 1.90	555 11.55	33 0.93	.8	422	43
7N1	8.3	1,020	869	61 3.04	22 1.81	125 5.44	0	129 2.11	565 11.76	32 0.90	.5	242	53
9D1	8.4	1,060	871	57 2.84	15 1.23	145 6.31	5 0.17	106 1.74	561 11.68	36 1.02	.5	204	61

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
21/17-5P1	8271	Mauldin, 5		R, G, 16					84	D	Irr	MEC	14	Clear.
6N2	8574	A. M. O'Neill, 5	1,800	R, G, 16					85	D	Irr	MEC	14	Do.
10D1	Diesel	Western State Oil Co	3,000	R					109	D	Ind	MEC	14	Do.
11E1	8615	Airway Farms, 6 M		16					81	D	Ind	MEC	14	Do.
13N1	9205	8							84	D	Irr	MEC	14	Do.
21/18-1D1	8237	Stone, 2	1,200	16	300	1,200			79	D	Irr	MEC	14	Do.
2M1	8402	4	1,200	R, G, 16	300	1,200	5- 4-51	289.1	84	S	Irr	MEC	14	Do.
3A1	9238	8	2,094	R, G, 16	600	2,075			84	S	Irr	MEC	14	Do.
3B1	8302	3	1,200	16	300	1,200			82	S	Irr	MEC	14	Do.
4D1	8671	Airway Farms, 7 K	1,800	R, G, 16					81	S	Irr	MEC	14	Do.
5D1	1160	Thomas, 3	1,250	16	425	1,250			76	S	Irr	MEC	14	Do.
5D2	1192	4	1,475	R, G, 16			5- 5-51	270.8	77	S	Irr	MEC	14	Do.
7N1	8626	S. and V. Thomas, 5	2,172	R, G, 16	650	2,172			82	D	Irr	MEC	14	Do.
9D1	8670	R. H. Crosno, 2		R, G, 16					82	S	Irr	MEC	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
21/18-10D1	8.6	1,100	836	59 2.94	16 1.32	160 6.96	6 0.20	93 1.52	507 10.56	42 1.18	0.5	213	62
11D1	8.6	1,180	976	69 3.44	14 1.15	165 7.17	8 0.27	78 1.28	635 13.22	47 1.33	.4	230	61
14D1	8.5	963	611	36 1.80	11 0.90	145 6.31	7 0.23	86 1.41	334 6.95	36 1.02	.3	135	70
14M2	8.0	1,210	808	76 3.79	8.5 0.70	175 7.61	0	74 1.21	461 9.60	52 1.47	.3	224	63
14M3	8.5	1,050	680	48 2.40	6.3 0.52	170 7.39	5 0.17	53 0.87	379 7.89	46 1.30	.4	146	72
15D1	8.5	1,090	729	66 3.29	14 1.15	150 6.52	7 0.23	89 1.46	412 8.58	36 1.02	.5	222	59
15E1	8.5	1,000	658	53 2.64	11 0.90	150 6.52	7 0.23	100 1.64	352 7.33	36 1.02	.1	177	65
16D1	8.4	1,250	809	99 4.94	31 2.55	140 6.09	5 0.17	97 1.59	454 9.45	32 0.90	.8	374	45
18N1	8.4	991	725	53 2.64	25 2.06	124 5.39	0	149 2.44	420 8.74	30 0.85	.3	235	53
21N1	8.3	1,280	874	87 4.34	37 3.04	146 6.35	0	112 1.84	502 10.45	47 1.33	.7	369	46
22B1	8.2	1,370	954	111 5.54	30 1.64	165 7.17	0	69 1.13	583 12.14	41 1.16	.1	359	50
22B2	8.2	1,310	895	101 5.04	19 1.56	160 6.96	0	88 1.44	535 11.14	37 1.04	.7	330	51
23D1	8.4	1,010	648	44 2.20	9.5 0.78	155 6.74	0	78 1.28	364 7.58	37 1.04	.1	149	69
25D1	8.7	925	585	36 1.80	4.6 0.38	155 6.74	18 0.60	100 1.64	298 6.20	24 0.68	.2	109	76

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
21/18-10D1	8770	L. E. Culp		16					82	D	Irr	MEC	14	Clear.
11D1	8236	Stone, 1	1,200	16	300	1,200	8-27-50	p 328.4	78	D	Irr	MEC	14	Cloudy.
14D1	9005	Calflax-Murray, 10	1,500	R, G, 16			5- 3-51	265.9	82	S	Irr	MEC	14	Clear.
14M2	1731	Gifford Olive Co., 1	1,000	12	500	1,000			75	D	Irr	MEC	14	Do.
14M3	1343	Gifford Olive Co							78	D	Irr	MEC	14	Do.
15D1	8735	Calflax-Murray, 8	1,155	16					79	D	Irr	MEC	14	Do.
15E1	1278	7	1,306	16					81	D	Irr	MEC	14	Do.
16D1	1270	R. H. Crosno, 1	1,165	16					77	D	Irr	MEC	14	Do.
18N1	9090	John Kochergen	1,475	R, G, 16			4-30-51	p 401.4	84	S	Irr	MEC	14	Do.
21N1	9199	Fritz Falk	630	14	340	610	5- 4-51	156.2	76	D	Irr	MEC	13	Do.
22B1	595	Gifford Olive Co., 3		12					74	D	Irr	MEC	14	Do.
22B2	8434	Gifford Olive Co		12						D	Irr	MEC	14	Do.
23D1	604	Calflax Murray, 9	1,360						80	D	Irr	MEC	14	Do.
25D1	8228	Wheat, 3		R, G, 16					82	D	Irr	MEC	14	Do.

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance $K \times 10^6$ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
21/18-27B1	8.5	1,150	780	73 3.64	15 1.23	166 7.22	0	92 1.51	448 9.33	33 0.93	0.6	244	60
27G1	8.3	1,120	744	56 2.79	14 1.15	174 7.57	0	60 0.98	433 9.01	37 1.04	.5	197	66
27Q1	7.6	1,230	822	78 3.89	14 1.15	174 7.57	0	62 1.02	474 9.87	51 1.44	.4	252	60
28C1	8.1	1,270	859	87 4.34	29 2.38	150 6.52	0	100 1.64	502 10.45	42 1.18	.1	336	49
28F1	8.4	1,350	895	91 4.54	27 2.22	178 7.74	0	68 1.11	487 10.14	79 2.23	.3	338	53
28G4	8.3	1,470	1,008	106 5.29	33 2.71	186 8.09	0	64 1.05	570 11.87	81 2.28	.5	400	50
28G2	8.2	1,156	1,640	127 6.34	47 3.87	192 8.35	0	80 1.31	663 13.80	88 2.48	.2	510	45
28G3	8.5	1,670	1,164	129 6.44	41 3.37	208 9.04	0	96 1.57	654 13.62	84 2.37	1.0	490	48
28H1	8.4	1,600	1,120	118 5.89	39 3.21	192 8.35	0	82 1.34	638 13.28	93 2.62	.5	455	48
34P1	8.6	1,030	661	35 1.75	6.8 0.56	174 7.57	14 0.47	60 0.98	352 7.33	49 1.38	.2	116	77
34Q1	8.0	1,270	830	65 3.24	16 1.32	196 8.52	0	76 1.25	440 9.16	76 2.14	.4	228	65
35N1	8.8	891	583	22 1.10	7.0 0.58	166 7.22	20 0.67	58 0.95	318 6.62	21 0.59	.8	84	81
21/19-6D1	8.7	974	619	32 1.60	2.7 0.22	170 7.39	16 0.53	90 1.47	318 6.62	36 1.02	.1	91	80
6D2	8.7	936	602	32 1.60	3.2 0.26	170 7.39	14 0.47	89 1.46	303 6.31	36 1.02	.4	93	80

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
21/18-27B1	9214	L. G. Nieson, 8		R, G, 16					78	D	Irr	MEC	13	Clear.
27G1	Gas	L. G. Nieson		R, G, 16			3- 7-51	p 323.9	80	D	Irr	MEC	13	Do.
27Q1	8563	L. G. Nieson, 5	1,196	R, G, 16	300	1,196			79	S	Irr	MEC	13	Do.
28C1	9198	9		R, G, 16					77	D	Irr	MEC	14	Do.
28F1	Gas	L. G. Nieson		11			1-15-51	179.37	79	D	Irr	MEC	13	Do.
28G4	Gas	do		14					81	S	Irr	MEC	13	Do.
28G2	Gas	do		14					78	D	Irr	MEC	13	Do.
28G3	Gas								78	D	Irr	MEC	13	Do.
28H1	Gas	L. G. Nieson		16			5- 5-51	165.0	77	D	Irr	MEC	13	Do.
34P1	Gas	E. J. D'Artenay	1,400	16	350	1,000	9-13-50	p 343.5	85	D	Irr	MEC	13	Do.
34Q1	Gas	do	660	16	350	660	9-13-50	p 236	81	100 ft	Irr	MEC	13	Do.
35N1	9192	Calflax-Murray, 11		R, G, 16					87	D	Irr	MEC	13	Do.
21/19-6D1	8526	Stone, 5	m 1,028		300	1,394	5- 4-51	253.4	79	S	Irr	MEC	14	Do.
6D2	9009	6	1,200	R, G, 16	300	1,200			78	S	Irr	MEC	14	Do

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

PARTIAL ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C.	Sum of determined constituents (ppm)	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions							Boron (B) (ppm)	Hardness as $CaCO_3$ (ppm)	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)			
21/19-19C1	8.7	946	599	28 1.40	3.6 0.40	165 7.17	22 0.73	121 1.98	298 6.20	22 0.62	0.4	85	81
19C2	8.2	908	574	30 1.50	3.6 0.30	160 6.96	0	147 2.41	280 5.83	28 0.79	.3	90	79
19D1	8.5	913	618	29 1.45	3.6 0.30	190 8.26	10 0.33	128 2.10	296 6.16	26 0.73	.2	88	83
19D2	7.9	868	549	28 1.40	4.6 0.38	150 6.52	0	136 2.23	273 5.68	26 0.73	.4	89	79
22/19-20N2	8.0	783	480	12 0.60	8.0 0.66	170 7.39	0	304 4.98	94 1.96	45 1.27	1.0	63	85
20P1	8.0	983	584	12 0.60	9.0 0.74	205 8.91	0	382 6.26	95 1.98	74 2.09	1.5	67	87
20Q1	8.4	2,390	1,342	38 1.90	14 1.15	455 19.79	14 0.47	286 4.69	139 2.89	540 15.23	1.4	152	87
20Q2	8.1	1,480	899	23 1.15	9.0 0.74	295 12.83	0	442 7.24	222 4.62	130 3.67	1.8	94	87

TABLE 2.—*Partial chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day collected (August 1951)	Remarks
21/19-19C1	1336	Wheat, 4		R, G, 16			9-15-50	212.1	80	D	Irr	MEC	14	Clear.
19C2	1336	2		R, G, 16			9-15-50	205.9	78	D	Irr	MEC	14	Slightly muddy.
19D1	1326	1							78	D	Irr	MEC	14	Clear.
19D2	1326	Wheat							76	D	Dom	MEC	14	Do.
22/19-20N2	8932	W. F. Prouty							79	S	Irr	MEC	13	Do.
20P1	8293	do		R, G, 12			5- 4-51	p 179.6	78	D	Irr	MEC	13	Do.
20Q1	8729	do		R, G, 16			5- 4-51	p 226.6	80	D	Irr	MEC	13	Do.
20Q2	8572	do		R, G, 14			5- 4-51	p 135.9	75	S	Irr	MEC	13	Do.

[1] Tap under water tower.
[2] Pressure system.
[3] Plug between pump and fertilizer pipe.
[4] Tap at base of windmill.
[5] Tap at tank.
[6] Tap in yard.
[7] Tap under high tank.
[8] Tap at base of steel tank.
[9] Hose from water jacket around bearing.
[10] Pump started for sample. Samples collected when appearance of water changed. Well not used except as an emergency standby.
[11] Hose from tank.
[12] Open storage tank near well.
[13] North side of gas trap.

TABLE 3.—*Complete chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*

ANALYSES OF WATER

[Samples collected by U. S. Geological Survey and California Division of Water Resources in August and September, 1951. Analyses by Quality of Water branch, U. S. Geological Survey, in cooperation with Water Quality Section, California Division of Water Resources]

Well No.	pH	Specific conductance K×10° at 25° C	Sum of determined constituents ppm	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions									Boron (B) ppm	Fluoride (F) ppm	Silica (SiO_2) ppm	Hardness as $CaCO_3$ ppm	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)					
13/12-1F1	8.1	2,980	2,460	288 14.37	132 10.86	295 12.83	8.0 0.20	0	114 1.87	1,470 30.60	152 4.29	16 0.26	3.4	0.3 0.02	41	1,260	34
13/13-9Q1	8.3	5,140	3,060	94 4.69	29 2.38	975 42.40	5.0 0.13	0	145 2.38	520 10.83	1,330 37.51	0	2.5	0	37	354	85
28N2	8.4	3,110	2,060	76 3.79	43 3.54	590 25.66	4.0 0.10	0	200 3.28	683 14.22	505 14.24	11 0.18	3.0	0	43	366	78
13/14-10D1	8.1	2,300	1,490	56 2.79	16 1.32	450 19.57	6.4 0.16	0	228 3.74	291 6.06	478 13.48	1.6 0.03	1.4	0.3 0.02	75	206	82
34M1	8.0	5,350	4,060	228 11.38	171 14.06	897 39.01	12 0.31	0	244 4.00	1,700 35.39	870 24.54	10 0.16	1.6	0	49	1,272	60
14/12-14D1	7.9	4,200	2,820	186 9.28	7.5 0.62	800 34.79	9.0 0.23	0	290 4.75	598 12.45	925 26.09	98 1.58	8.9	0.2 0.01	43	495	77
14/14-9M1	8.0	7,540	4,450	303 15.07	39 3.21	1,260 54.79	13 0.33	0	126 2.06	398 8.29	2,310 65.15	5.4 0.09	1.4	0.2 0.01	54	914	75
11N1	8.0	6,400	5,000	297 14.82	257 21.13	980 42.61	10 0.26	0	262 4.29	2,230 46.43	1,045 29.47	0	2.5	0.2 0.01	45	1,800	54
14/15-18E1	8.5	1,700	1,210	29 1.45	3.9 0.32	355 15.44	3.4 0.09	0	180 2.95	532 11.08	118 3.33	0.1 0.00	1.3	0.4 0.02	75	88	89
15/13-9N1	8.1	2,330	1,760	88 4.39	83 6.83	370 16.09	4.8 0.12	0	216 3.54	912 18.99	142 4.00	0.3 .004	3.3	0.3 0.02	50	561	59
26Q2	8.3	1,040	730	16 0.80	5.1 0.42	220 9.57	2.4 0.06	0	330 5.41	215 4.48	33 0.93	0.24 0.00	1.8	0.2 0.01	74	61	88

TABLE 3.—*Complete chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS

Depth, m, measured depths of wells furnished by other agencies.
Type of well: P, percussion or cable tool, R, rotary. G, gravel-packed. For example, R, G, 16 would indicate a drilled rotary gravel-packed well with a 16-inch casing.
Depth to water: p, pumping level.

Point of sampling: B, building near well, D, discharge, S, standpipe.
Use: Dom, domestic; Ind, Industrial; Irr, irrigation; PS, public supply; S, stock.
Collectors' names are abbreviated as follows: MEC, M. E. Cooley, PRW, P. R. Wood.

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day of collection (August 1951)	Appearance and remarks
13/12-1F1	1881	Lyon and Hoag, 3								B	Dom	MEC	23	Clear.
13/13-9Q1	1147	Hotchkiss Estate, 36	1,484	R, 18	450	1,484			88	D	Irr	MEC	23	Clear, pumping sand.
28N2	2274	Vista del Llano, 19	1,620	16	442	1,620			87	S	Irr	MEC	23	Organic material from standpipe.
13/14-10D1		Firebaugh Ginning Co	500	R, G, 8	440	500				B	Dom	MEC	23	Clear.
34M1	1095	Hotchkiss Estate, 22	m 900		220				73	D	Irr	MEC	23	Do.
14/12-14D1	2357	Employee's Enterprises, 12	1,759	R, G, 16	556	1,759	8- 7-51	p 513.4	83	D	Irr	MEC	23	Do.
14/14-9M1	2237	Pappas and Co., 4	1,400	R, G, 16	696	1,400			85	D	Irr	MEC	23	Do.
11N1	1918	Vista del Llano, Y-S	696	16	305				73	D	Irr	MEC	23	Do.
14/15-18E1	2137	Silveria Bros., 2	850	R, G, 16	530	850	4-24-51	p 208.0	78	D	Irr	MEC	23	Do.
15/13-9N1	2534	Employee's Enterprises, M9	1,783	R, G, 16	528	1,783			92	D	Irr	MEC	23	Do.
26Q2		Shell Oil Co., Cheney Pump Station.	980	12	940	963			86	D	Ind	MEC	23	Clear; pump ran 5 min.

TABLE 3.—*Complete chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

ANALYSES OF WATER—Continued

Well No.	pH	Specific conductance K×10⁶ at 25° C	Sum of determined constituents ppm	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions									Boron (B) ppm	Fluoride (F) ppm	Silica (SiO_2) ppm	Hardness as $CaCO_3$ ppm	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)					
15/14–1K1	7.9	1,100	777	36 1.80	9.5 0.78	192 8.35	5.8 0.15	0	296 4.85	249 5.18	52 1.47	0.2 0.00	1.4	0	85	129	75
16/14–2J1	8.5	1,780	1,300	66 3.29	17 1.40	335 14.57	2.4 0.06	0	124 2.03	702 14.64	68 1.92	1.5 0.02	2.7	0.7 0.04	40	234	75
16/15–6N1	8.2	1,640	1,200	86 4.29	43 3.54	235 10.22	2.8 0.07	0	158 2.59	657 13.68	60 1.69	0.04 0.00	1.7	0.3 0.02	34	392	56
8Q1	7.7	1,500	1,100	111 5.54	90 7.40	100 4.35	3.3 0.08	0	180 2.95	574 11.95	62 1.75	20 0.32	.9	0.1 0.01	48	647	25
27E1	8.3	1,380	956	45 2.25	11 0.90	255 11.09	1.8 0.05	0	116 1.90	505 10.51	54 1.52	0.04 0.00	1.5	0.6 0.03	25	158	78
35D1	8.2	2,450	2,070	175 8.73	192 15.79	168 7.31	2.8 0.07	0	212 3.47	1,260 26.23	58 1.64	59 0.95	1.5	0	46	1,226	23
16/16–18N1	8.2	1,990	1,590	141 7.04	145 11.92	130 5.65	2.5 0.06	0	188 3.08	947 19.72	53 1.49	34 0.55	1.3	0	43	948	23
32E2	8.1	1,420	1,030	66 3.29	42 3.45	196 8.52	3.8 0.10	0	144 2.36	538 11.20	60 1.69	2.6 0.04	1.6	0.4 0.02	47	337	55
17/15–1N1	8.0	1,700	1,320	111 5.54	125 10.28	124 5.39	2.8 0.07	0	222 3.64	723 15.05	65 1.83	16 0.26	1.1	0.2 0.01	46	791	25
6N1	8.5	1,620	1,240	98 4.89	90 7.40	160 6.96	3.6 0.09	0	204 3.34	672 13.99	77 2.17	1.5 0.02	.4	0	33	614	36
18K1	8.0	1,760	1,280	79 3.94	121 9.95	166 7.22	3.4 0.09	0	234 3.83	645 13.43	105 2.96	6.6 0.11	1.2	0.4 0.02	36	694	34
17/16–2E1	8.0	1,720	1,300	147 7.34	16 1.32	232 10.09	4.6 0.12	0	130 2.13	719 14.97	60 1.69	0.15 0.00	2.0	0.4 0.02	50	433	53
4G1	8.5	1,750	1,060	16 0.80	0.73 0.06	370 16.09	1.0 0.03	0	140 2.29	256 5.33	3.4 8.86	1.2 0.02	2.0	0.9 0.05	31	43	95
7N1	8.1	1,700	1,220	88 4.39	56 4.61	224 9.74	2.8 0.07	0	126 2.06	640 13.32	110 3.10	2.3 0.04	2.2	0.4 0.02	30	450	52

TABLE 3.—*Complete chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—Continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day of collection (Ausust 1951)	Appearance and remarks
15/14-1K1	3176	Ed Chinn	912	R, G, 14	405	912	4-27-51	166.9	77	D	Irr	MEC	23	Clear; hydrogen sulfide odor.
16/14-2J1	2540	Murietta Farms, 12 A	1,781	R, G, 16	627	1,781			88	D	Irr	MEC	23	Clear.
16/15-6N1	1785	Yearout, 2	1,673	R, G, 16	396	1,673			82	D	Irr	MEC	23	Do.
8Q1	1781	5	550	R, G, 12					75	D	Irr	MEC	23	Do.
27E1	8849	Vista del Llano, 35	1,689	16	605	1,689	4-25-51	p 402.7	84	D	Irr	MEC	23	Do.
35D1	4528	39	600	12			4-25-51	157.42	73	D	Irr	MEC	23	Do.
16/16-18N1	4599	22	m 504	R, G, 12	275	521	7-22-50	p 176.7	75	D	Irr	MEC	22	Do.
32E2	4207	11	1,457	R, G, 16	503	1,457	8- 4-51	p 348.3	80	D	Irr	MEC	22	Do.
17/15-1N1	1293	29	1,886	16	465	1,886	7-18-50	p 388.7	77	D	Irr	MEC	22	Do.
6N1	8688	Giffen Inc., Cantua 16	2,208	R, G, 16	717	2,208			85	D	Irr	MEC	22	Do.
18K1	8721	Cantua 10	2,240	R, G, 16	697	2,240			78	D	Irr	MEC	22	Do.
17/16-2E1	4608	Vista del Llano, 25	m 553		290	561			76	S	Irr	MEC	22	Do.
4G1	4335	15	1,516	R, G, 16	346	1,487			88	D	Irr	MEC	22	Cloudy, sand.
7N1	8889	27	1,671	R, G, 16	400	1,671	4-30-51	403.8	82	D	Irr	MEC	22	Clear.

TABLE 3.—*Complete chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10⁶ at 25° C	Sum of determined constituents ppm	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions									Boron (B) ppm	Fluoride (F) ppm	Silica (SiO_2) ppm	Hardness as $CaCO_3$ ppm	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)					
17/16-13D1	8.2	1,750	1,330	147 7.34	42 3.45	214 9.31	4.8 0.12	0	131 2.15	756 15.74	61 1.72	0	1.5	0	37	540	46
17/17-23N1	8.2	1,930	1,480	154 7.68	54 4.44	238 10.35	2.3 0.06	0	100 1.64	863 17.97	90 2.54	0	1.2	0.2 0.01	25	606	46
24N1	8.1	1,600	1,170	112 5.59	31 2.55	218 9.48	2.1 0.05	0	108 1.77	658 13.70	72 2.03	0.06 0.00	1.3	0.4 0.02	24	407	54
31R1	8.3	1,430	1,020	109 5.44	19 1.56	186 8.09	1.6 0.04	0	74 1.21	593 12.35	55 1.55	0	1.6	0	17	350	53
33N1	8.3	1,270	858	62 3.09	30 2.47	174 7.57	2.4 0.06	0	123 2.02	449 9.35	55 1.55	0	1.3	0	24	278	57
35N1	8.4	1,130	796	56 2.79	12 0.99	184 8.00	1.7 0.04	0	130 2.13	400 8.33	45 1.27	0.9 0.01	0.8	0	32	189	68
18/16-4N1	8.1	1,910	1,440	107 5.34	23 1.89	330 14.35	2.6 0.07	0	80 1.31	774 16.11	121 3.41	0.3 0.00	----------	0	32	362	66
17M1	8.3	1,820	1,300	104 5.19	32 2.63	265 11.52	3.0 0.08	0	126 2.06	683 14.22	117 3.30	1.3 0.02	2.8	0.2 0.01	34	391	59
26F1	8.1	2,160	1,650	138 6.89	121 9.95	208 9.04	10 0.26	0	132 2.16	963 20.05	105 2.96	9.8 0.16	1.2	0	27	842	35
18/17-8R1	8.2	2,710	1,640	54 2.69	42 3.45	500 21.74	2.0 0.05	0	269 4.41	321 6.68	565 15.93	0	2.2	0.2 0.01	26	307	78
18/18-5N1	8.0	1,100	745	49 2.45	12 0.99	170 7.39	1.6 0.04	0	120 1.97	379 7.89	39 1.10	0	1.1	0.2 0.01	34	172	68
19/16-13N1	7.9	1,960	1,480	107 5.34	116 9.54	190 8.26	4.2 0.11	0	148 2.43	854 17.78	100 2.82	2.9 0.05	2.5	0.1 0.01	29	744	36
19/17-10N1	8.2	1,900	1,470	113 5.64	116 9.54	182 7.91	4.0 0.10	0	154 2.52	856 17.82	90 2.54	2.3 0.04	1.3	0.1 0.00	27	759	34
19/17-36D1	8.5	1,340	953	63 3.14	54 4.44	160 6.96	2.6 0.07	0	160 2.62	505 10.51	57 1.61	1.3 0.02	1.1	0	30	379	48

TABLE 3.—*Complete chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day of collection (August 1951)	Appearance and remarks
17/16-13D1	8552	O. F. Matheson, 4	m 653	R, G, 16	376	902	4-24-51	p 264.7	76	D	Irr	MEC	22	Clear.
17/17-23N1	4698	H. W. Deavenport, 2	645	14	250	645				D	Irr	MEC	22	Do.
24N1	1313	3	634	R, G, 16	220	634	8- 3-51	p 202.9	75	D	Irr	MEC	22	Do.
31N1	8264	R. Gilkey	638	R, G, 12					79	S	Irr	MEC	22	Do.
33N1	8794	J. E. O'Neill, 7	659	16	449	612	8- 4-51	p 373.7	78	S	Irr	MEC	22	Do.
35N1	4004	Yraceburu, 1	1,178	14	298	1,178	4-24-51	p 280.4	79	D	Irr	MEC	22	Do.
18/16-4N1	8238	Sunset Farms, 2	1,798	R, G, 16	498	1,798			90	D	Irr	MEC	22	Do.
17M1	8800	6	2,435	R, G, 16	800	2,435			92	D	Irr	MEC	22	Do.
26F1	4609	Harris, 4	1,800	R, G, 16	430	1,800	4-30-51	346.4	77	D	Irr	MEC	22	Do.
18/17-8R1	8317	J. E. O'Neill, 12	1,929	16	579	1,929	8- 4-51	p 431.6	89	S	Irr	MEC	22	Clear; pumping sand.
18/18-5N1	4587	Valley Dehydrator Co	1,000	16	200	1,000	5- 2-51	p 227.1	77	D	Irr	MEC	22	Clear.
19/16-13N1	8340	Calflax, 21	m2,070	16	550	2,106	5- 1-51	368	78	D	Irr	MEC	22	Do.
9/17-10N1	8341	O'Neill Farms, 2	m1,428	16	548	1,993	5- 1-51	333.1	79	S	Irr	MEC	22	Do.
19/17-36D1	8192	Giffen Inc., Efird 2	m1,529	16	500	1,750			82	S	Dom	MEC	22	Do.

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TABLE 3.—*Complete chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10° at 25° C	Sum of determined constituents ppm	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions									Boron (B) ppm	Fluoride (F) ppm	Silica (SiO_2) ppm	Hardness as $CaCO_3$ ppm	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)					
19/18-3N1	8.4	1,360	819	19 0.95	3.6 0.30	269 11.70	1.0 0.03	0	184 3.02	163 3.39	238 6.71	3.4 0.05	2.2	0.5 0.03	29	62	90
19/19-19Q1	8.5	1,290	915	74 3.69	6.3 0.52	215 9.35	0	0	106 1.74	512 10.66	27 0.76	0	1.4	0	27	210	69
20/15-16A1	8.7	1,970	1,420	72 3.59	99 8.14	243 10.57	6.0 0.15	14 0.47	162 2.65	730 15.20	142 4.00	4.1 0.07	2.9	0	31	586	47
16C1	8.7	1,930	1,410	68 3.39	106 8.72	238 10.35	5.4 0.14	18 0.60	184 3.02	710 14.78	135 3.81	3.9 0.06	2.0	0	32	606	46
22N1	9.1	2,100	1,550	92 4.59	114 9.37	245 10.65	4.5 0.12	28 0.93	166 2.72	809 16.84	135 3.81	5.5 0.09	2.0	0	38	698	43
25D1	8.8	2,080	1,520	78 3.89	112 9.21	256 11.13	6.3 0.16	22 0.73	218 3.57	756 15.74	130 3.67	25 0.40	1.7	0	26	655	46
26M1	8.5	2,420	1,810	91 4.54	144 11.84	275 11.96	4.8 0.12	0	244 4.00	823 17.13	168 4.74	149 2.40	3.6	0	28	819	42
28D1	8.3	1,970	1,390	69 3.44	107 8.80	235 10.22	4.6 0.12	0	276 4.52	658 13.70	142 4.00	14 0.23	2.3	0	26	612	45
34B1	9.2	2,450	1,740	94 4.69	136 11.18	289 12.57	5.3 0.14	28 0.93	218 3.57	774 16.11	248 6.99	26 0.42	1.6	0	28	794	44
36E1	9.3	1,880	1,330	70 3.49	100 8.22	230 10.00	4.0 0.10	37 1.23	296 4.85	593 12.35	125 3.53	19 0.31	1.5	0	23	586	46
36Q1	8.5	2,320	1,720	118 5.89	114 9.37	280 12.18	4.4 0.11	0	284 4.65	897 18.67	125 3.53	15 0.24	2.8	0.1 0.01	26	763	44
20/16-21Q1	8.9	2,370	1,720	65 3.24	26 2.14	465 20.22	2.0 0.05	16 0.53	104 1.70	883 18.38	155 4.37	0.75 0.12	----------	0	22	269	79
32D3	9.1	2,860	2,240	155 7.73	165 13.57	325 14.13	7.0 0.18	26 0.87	212 3.47	1,260 26.23	165 4.65	6.5 0.10	2.0	0	28	1,065	40
20/17-14M1	8.1	1,460	1,070	76 3.79	61 5.02	182 7.91	2.8 0.07	0	154 2.52	588 12.24	49 1.38	2.9 0.05	1.1	0.3 0.02	30	440	47

TABLE 3.—*Complete chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature ° F.	Point of sampling	Use	Collected by	Day of collection (August 1951)	Appearance and remarks
19/18-3N1	8970	Boston Land Co., 28	1,900	14	1,010	1,900			89	D	Irr	MEC	22	Light yellow; sulfur odor.
19/19-19Q1	8958	H. I. Black	940	R, G, 16	485	940	4-30-51	299.3	79	D	Irr	MEC	22 (September 1951)	Clear.
20/15-16A1	9113	Zwang and Son		R, G, 16			4-26-51	292.3	82	D	Irr	PRW	1	Do.
16C1	8820	O. F. Busch		16			4-25-51	280.3	80	D	Irr	PRW	1	Do.
22N1	8672	Pleasant Valley Farms, 10	522	R, G, 16	152	517	4-25-51	p 174.0	74	D	Irr	PRW	1	Do.
25D1	749	Allen, 25 C	364	R, G, 18			4-26-51	152.0	74	D	Irr	PRW	1	Do.
26M1	862	Morshead-Allen	233	R, 14			4-26-51	124.0	70	D	Irr	PRW	1	Do.
28D1	817	Pleasant Valley Farms, 8	261	R, 16	170	252			72	D	Irr	PRW	1	Do.
34B1	1280	Z. L. Phelps	212	16			4-25-51	134.7	66	D	Irr	PRW	1	Do.
36E1	8750	George Uhl	200				8- 3-51	p 102.54	67	D	Irr	PRW	1	Do.
36Q1	8500	do	235				9- 3-51	p 124	69	D	Irr	PRW	1	Do.
20/16-21Q1	9196	Pleasant Valley Farms	1,280	R, G					86	D	Irr	PRW	1	Do.
32D3	8784	11	247	R, G, 18	60	247			70	D	Irr	PRW	1 (August 1951)	Do.
20/17-14M1	8289	A. M. O'Neill, 3	2,125	R, 16	541	2,125			78	D	Irr	MEC	22	Do.

TABLE 3.—*Complete chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

ANALYSES OF WATER—continued

Well No.	pH	Specific conductance K×10° at 25° C	Sum of determined constituents ppm	Parts per million (upper number) and equivalents per million (lower number) for indicated cations and anions									Boron (B) ppm	Fluoride (F) ppm	Silica (SiO_2) ppm	Hardness as $CaCO_3$ ppm	Percent sodium
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)					
20/17-20N1	8.2	1,580	1,170	91 4.54	84 6.91	162 7.04	2.8 0.07	0	157 2.57	657 13.68	62 1.75	9.7 0.16	0.92	0	27	572	38
20/18-21N1	8.4	1,100	753	43 2.15	14 1.15	186 8.09	1.5 0.04	0	118 1.93	371 7.72	49 1.38	0.13 0.00	1.0	0.2 0.01	30	165	71
21/15-10D2	8.5	3,790	2,990	205 10.23	149 12.25	560 24.35	8.5 0.22	12 0.40	254 4.16	1,610 33.52	260 7.33	36 0.58	4.5	0.6 0.03	24	1,124	52
12Q1	8.9	1,480	1,050	93 4.64	61 5.02	160 6.96	4.8 0.12	22 0.73	230 3.77	507 10.56	60 1.69	5.8 0.09	.62	0	25	483	42
21/16-7E1	8.2	1,330	942	91 4.54	53 4.36	138 6.00	2.8 0.07	0	260 4.26	436 9.08	49 1.38	15 0.24	1.3	0	28	445	40
8E1	8.9	1,890	1,390	116 5.79	81 6.66	215 9.35	5.0 0.13	18 0.60	202 3.31	721 15.01	98 2.76	8.4 0.14	1.2	0.1 0.01	30	622	43
10N2	9.2	1,410	1,020	93 4.64	51 4.19	148 6.44	2.8 0.07	20 0.67	136 2.23	549 11.43	52 1.47	6.0 0.10	1.2	0	28	442	42
21R1	8.5	1,340	1,010	93 4.64	50 4.11	150 6.52	1.8 0.05	0	186 3.05	528 10.99	44 1.24	7.9 0.13	----- ---	0	24	438	43
23R1	8.8	1,230	858	81 4.04	47 3.87	130 5.65	2.8 5.65	16 0.53	206 3.38	396 8.24	34 0.96	24 0.39	1.5	0	25	396	41
35A1	8.9	1,520	1,120	85 4.24	53 4.36	190 8.26	4.0 0.10	12 0.40	130 2.13	646 13.45	38 1.07	3.3 0.05	.8	0	29	430	49
22/16-11J1	8.2	1,570	1,150	76 3.79	31 2.55	250 10.87	2.6 0.07	0	158 2.59	599 12.47	40 1.13	50 0.81	1.5	0	25	317	63
12F1	8.8	1,750	1,340	121 6.04	79 6.50	180 7.83	4.6 0.12	12 0.40	164 2.69	761 15.84	39 1.10	36 0.58	.6	0	29	627	38

TABLE 3.—*Complete chemical analyses of water and descriptions of wells in the Mendota-Huron area, California*—Continued

DESCRIPTION OF WELLS—continued

Well No.	Transformer No. or source of power	Owner or user and owner's well No.	Depth (feet)	Type of well and casing diameter (inches)	Perforated interval (feet)		Water level		Description of water sample					
					Top	Bottom	Date measured	Depth to water below land-surface datum (feet)	Temperature °F.	Point of sampling	Use	Collected by	Day of collection (August 1951)	Appearance and remarks
20/17-20N1	1173	R. Giffen Inc	1,335	16	315	1,335			73	D	Irr	MEC	22	Clear.
20/18-21N1	8370	Airway Farms, 1	m1,300	R, G, 16	503	1,732			82	D	Irr	MEC	22 (September 1951)	Do.
21/15-10D1	8795	C. N. Gribble		12					73	D	Irr	PRW	1	Do.
12Q1	8485	Lovelace	338						66	D	Irr	PRW	1	Do.
21/16-7E1	476	do	220	14					66	D	Irr	PRW	1	Do.
8E1	9111	C. R. Van Dyke	463	R, G, 16	323	463	5- 1-51	105.1	66	D	Irr	PRW	1	Do.
10N2	949	W. Weeth, 7	350	16	100	350			73	D	Irr	PRW	1	Do.
21R1	8478	Starkey and Erwin, 10		R, G, 16					75	D	Irr	PRW	1	Do.
23E1	8174	W. Weeth	632	R, G, 16					69	S	Irr	PRW	1	Do.
35A1	8700	Starkey and Erwin, 6		R, G, 16			9-25-50	198.8	78	D	Irr	PRW	1	Do.
22/16-11J1	8650	3		R, G, 16					86	D	Irr	PRW	1	Do.
12F1	8657	2		R, G, 16					76	D	Irr	PRW	1	Do.

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