

STATE OF OREGON

**GROUND - WATER
LEVELS**

1963



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SALEM, OREGON
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OREGON GROUND-WATER LEVELS

by

Jack E. Sceva and Robert DeBow

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INTRODUCTION

One of the functions of the State Engineer is the administration of the laws and regulations relating to the appropriation and use of our ground-water resources. Ground water can be compared with money on deposit in a bank. As long as deposits exceed or equal withdrawals, a working balance can be maintained. If withdrawals should exceed deposits, the bank account is depleted, and if this practice is continued, the money on deposit is eventually exhausted. If the annual withdrawal of ground water from a ground-water reservoir exceeds the amount of annual recharge, there will be a reduction in the amount of ground water in storage and a corresponding lowering of water levels. The annual appropriation of ground water in excess of annual recharge is termed "ground-water mining".

The State Engineer has carried on a program for the measurement of ground-water levels for many years in cooperation with the Ground Water Branch of the U. S. Geological Survey. This program was expanded in 1962 and the task of measuring water levels was assumed by the State Engineer. This report presents hydrographs of wells located in many of the larger ground-water basins. These hydrographs show the extent of ground water depletion during periods of withdrawal and the extent of recovery during recharge periods and serve as an early warning system to depict areas where problems of ground-water supply are liable to develop.

To date, Oregon has very few serious problems of ground-water mining. Two areas have been determined as being "critical" on the basis of declining water

levels. These are the Cow Valley area in Northern Malheur County and The Dalles area in Wasco County. Both of these areas have been closed to further appropriations except for stock and domestic purposes. Both of the orders of the State Engineer determining these areas as being "critical" have been appealed to our courts to determine the constitutionality of Oregon's Ground Water Act.

There have been some water level declines in the deep wells in the Ordnance-Hermiston area and the Milton-Freewater area during the past few years. New observation wells are being established in this area to determine the extent and rate of these declines.

GROUND WATER INVESTIGATION

Ground-water investigations by the State Engineer were being carried out in the Salem Hills area of Marion County, the westside business district in Portland, and The Dalles area in Wasco County. The U. S. Geological Survey, working in financial cooperation with the State Engineer carried on investigations in the French Prairie-Mission Bottom area of Marion County, the Salem-Molalla Slope area of Marion and Clackamas Counties, and the Eola Hills-Amity area of Polk and Yamhill Counties. Recent reduction in State funds for ground-water investigations has caused a serious reduction in this cooperative program.

OBSERVATION WELL PROGRAM

The observation well program consists of the periodic measurement of the depth to water or artesian pressure in water wells located throughout the State. At the close of the year, the observation well net had been expanded to 715 wells located as follows:

County	Number of Observation Wells
Baker	9
Benton	7
Clackamas	37

County	Number of Observation Wells
Clatsop	2
Columbia	1
Coos	5
Crook	5
Curry	0
Deschutes	5
Douglas	7
Gilliam	0
Grant	5
Harney	46
Hood River	0
Jackson	5
Jefferson	4
Josephine	9
Klamath	57
Lake	110
Lane	20
Lincoln	0
Linn	26
Malheur	46
Marion	81
Morrow	22
Multnomah	28
Polk	9
Sherman	3
Tillamook	18
Umatilla	36
Union	12
Wallowa	0
Wasco	42
Washington	36
Wheeler	1
Yamhill	21

This report contains representative hydrographs for 147 observation wells in our statewide network. For convenience in using the report, the depicted hydrographs have been grouped together by area (Figure 1). A reference number assigned to each area is shown on Figure 1 and is listed at the top of each page of hydrographs. Information relating to measuring points on water levels in these and other observation wells can be obtained from the State Engineer.

ACKNOWLEDGEMENTS

We wish to acknowledge the help and assistance furnished by the Pacific Power & Light Company, the Harvey Aluminum Company, General Foods, Inc. and Dalles City

for measuring ground-water levels and making them available for this report. Appreciation is also given to the many well owners of the State who have cooperated in making their wells available for measurement in this program.

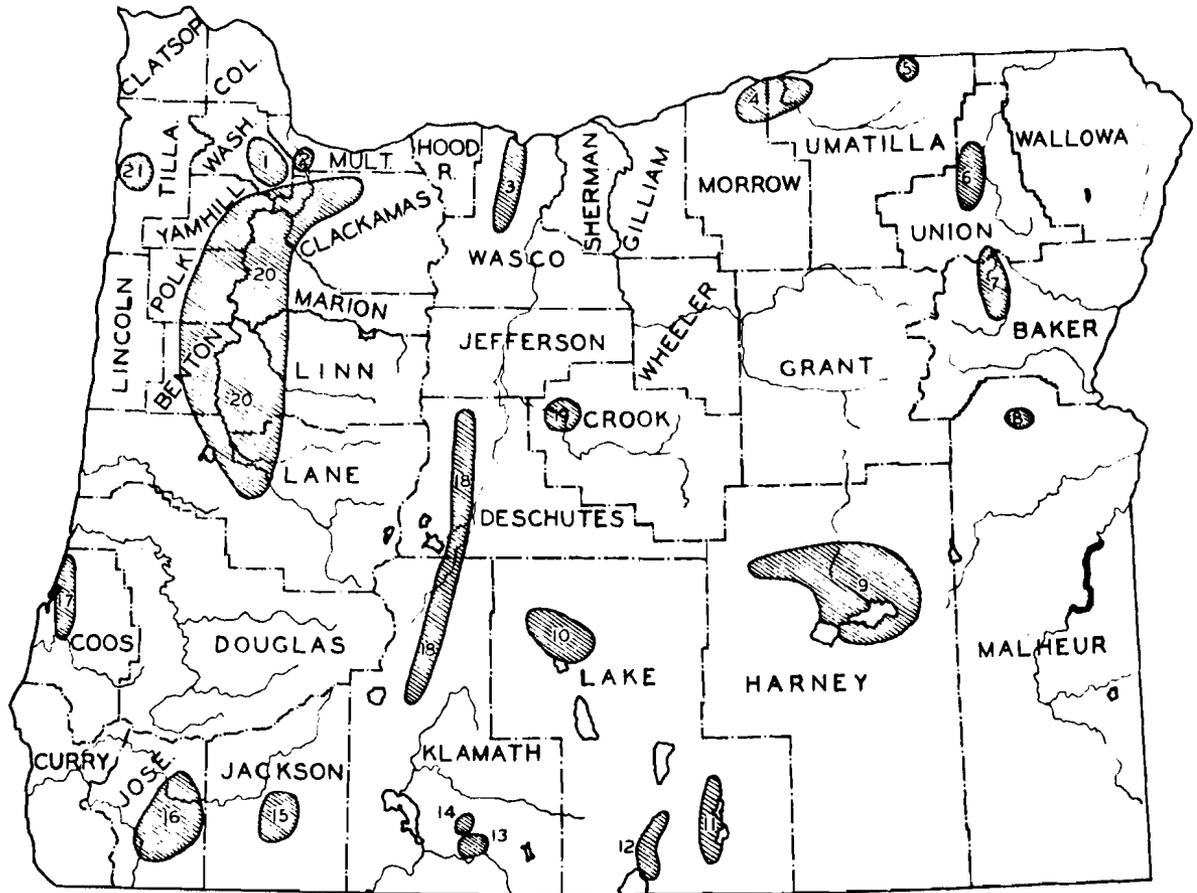
WELL NUMBERING SYSTEM

The well numbering system used in this report gives the township, range, section and 40-acre subdivision of the section in which the well is located. The first number is the township, and the second number is the range. In townships lying south of the Willamette Base Line and in ranges lying east of the Willamette Meridian, the letters "S" and "E" are omitted. The number following the hyphen indicates the section and the letter indicates the subdivision of the section as depicted in the following diagram. The number in parentheses following the letter is the serial number of the well.

For example, the well numbered 27/17-22R(2) indicates the well is in the SE $\frac{1}{4}$ SE $\frac{1}{4}$, Section 22, Township 27 South, Range 17 East, and is the second well noted in this 40-acre tract.

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

FIGURE 1



Ground Water Areas Represented By Hydrographs In This Report

- | | |
|-------------------------------|---------------------------------|
| 1. Tualatin Valley | 12. Goose Lake Basin |
| 2. Portland Metropolitan Area | 13. Yonna Valley |
| 3. The Dalles Area | 14. Swan Lake Valley |
| 4. Columbia Slope Area | 15. Medford Area |
| 5. Milton-Freewater Area | 16. Grants Pass Area |
| 6. Grande Ronde Valley | 17. Coos Bay Area |
| 7. Baker Valley | 18. Chemult-LaPine-Sisters Area |
| 8. Cow Valley Area | 19. Prineville Area |
| 9. Harney Basin | 20. Willamette Basin |
| 10. Fort Rock Area | 21. Tillamook Area |
| 11. Warner Valley | |

TUALATIN VALLEY (1)

The Tualatin Valley is a broad, deep, synclinal basin that has been partially filled with fine-grained lake deposits composed chiefly of silt and clay. The bedrock which forms the surrounding hills and underlies the lake deposits is a series of basaltic lava flows known as the Columbia River Basalt. Ground water generally occurs at the broken contact zones between individual lava flows. The Columbia River Basalt Formation is underlain by marine sedimentary rocks that are generally barren of potable water supplies.

Water levels in most wells throughout most of the Tualatin Valley recover each spring to the previous spring high position and no large scale problems of ground-water mining have developed. Some of the wells developing water from the Columbia River Basalt Formation in the Cooper Mountain and Bull Mountain areas have shown a small decline during the past few years. The observation well net is being expanded in these areas to aid in determining the area and extent of declining water levels.

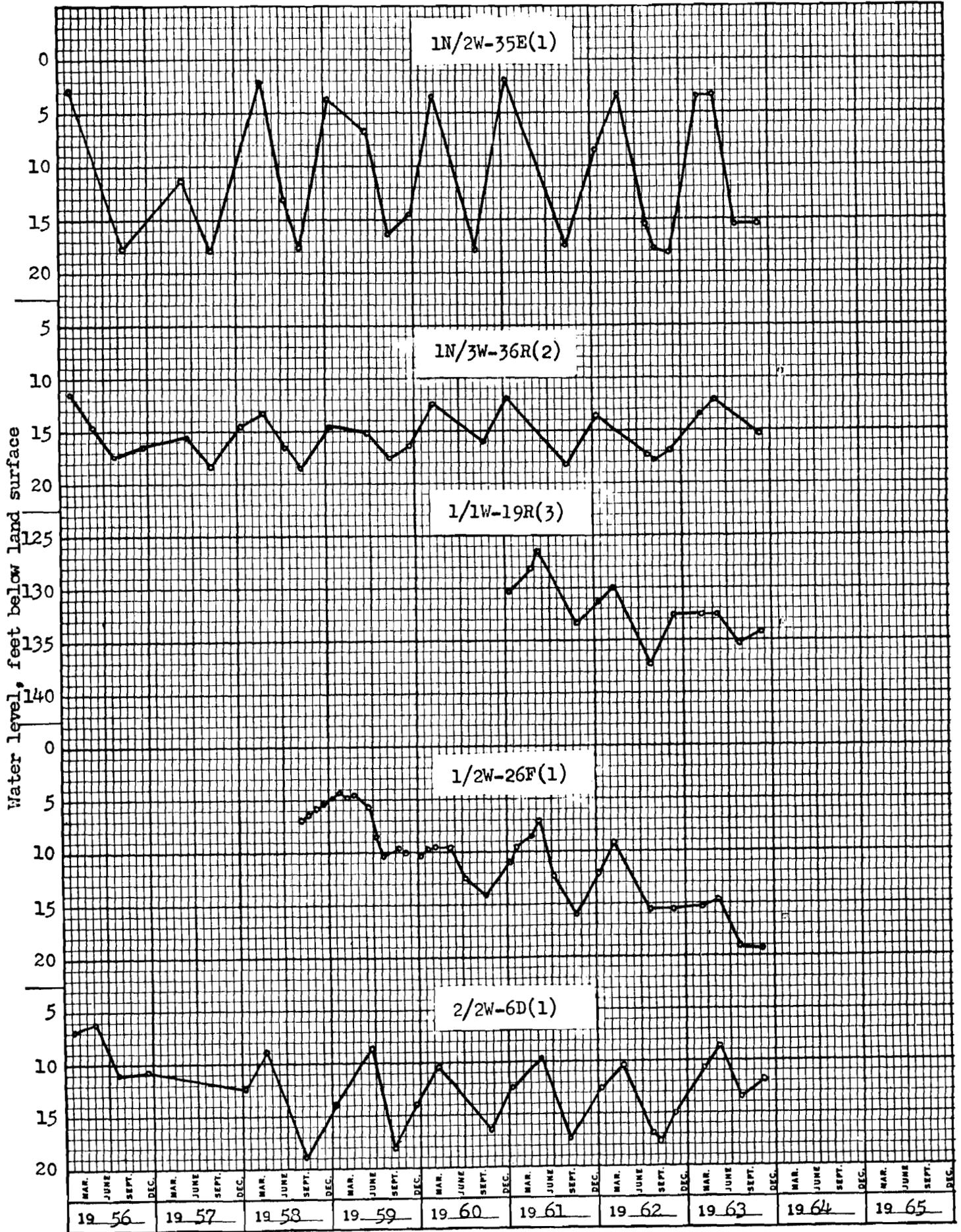
OBSERVATION WELLS

- 1N/2W-35E(1) (E. L. Lewis) is a 23-foot dug well in valley fill deposits at Orenco. Periodic water level measurements available from 1951 to date.
- 1N/3W-36R(2) (Birdseye Cannery) is a 171-foot drilled well in valley fill deposits at Hillsboro. Periodic water level measurements available from 1951 to date.
- 1/1W-19R(3) (E. Miller) is a 320-foot drilled well in basalt near Cooper Mountain School.
- 1/2W-26F(1) (K. Schaefer) is a 403-foot drilled well in basalt at the west end of Cooper Mountain.
- 2/2W-6D(1) (S. Rotchstrom) is a 486-foot drilled well in basalt located about 6 miles south of Hillsboro. Periodic water level measurements available from 1951 to date.

REFERENCES

- Hart, D. H. and Newcomb, R. C., 1956, Preliminary report on the ground-water resources of the Tualatin Valley, Oregon: U. S. Geological Survey open-file report.

TUALATIN VALLEY (1)



PORTLAND METROPOLITAN AREA (2)

The westside business district of Portland is one of the most concentrated areas of large ground-water developments in the Portland Metropolitan Area. Ground water is used for heating and cooling of many of the large office buildings.

The westside business district is underlain by water-bearing alluvial sand and gravel deposits and the Columbia River Basalt Formation. The water-bearing gravels are separated from the underlying basalt by a section of silt and clay known as the Sandy River Mudstone. Wells develop water from both the gravels and basalt. Owing to sewer charges, many operators have constructed recharge wells for the disposal of waste water. Some operators pump water from the basalt and dispose of water in the gravels and some operators pump water from the gravels and dispose of water into the basalt. This seasonal transfer of water from one formation to another and difference in water quality and water temperature has created a very complex hydrologic condition. To date, most of the observation wells in the metropolitan area have been concentrated in this area to aid in the evaluation of this problem area.

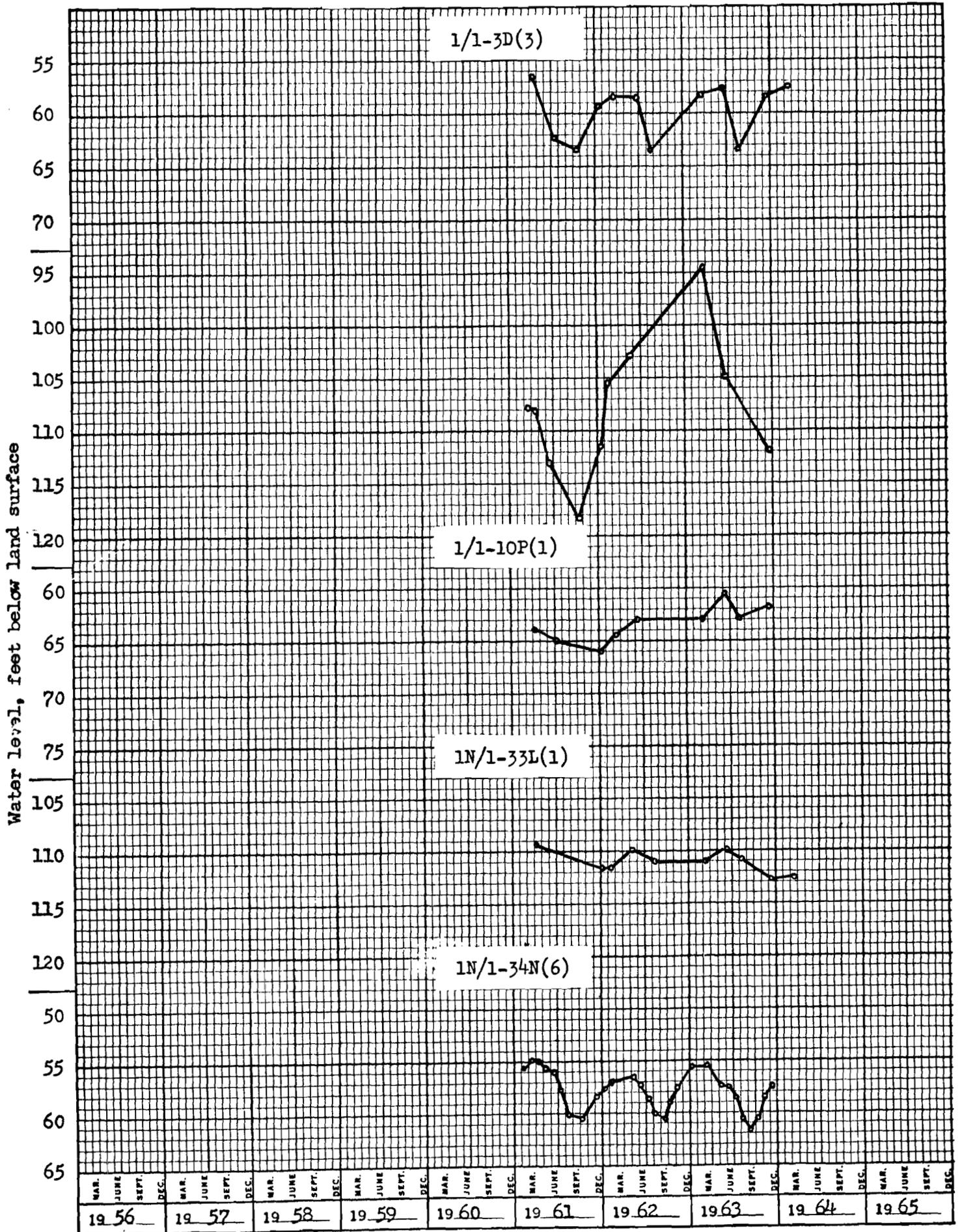
OBSERVATION WELLS

- 1/1-3D(3) (Pacific Power & Light Co. - Public Service Bldg.) is a 100-foot drilled well in gravel in the westside business district.
- 1N/1-33C(2) (Good Samaritan Hospital) is a 400-foot drilled well in basalt in the westside business district.
- 1/1-10P(1) (J. Donald Kroeker & Associates) is a 486-foot drilled well in basalt in Westside, Portland near Ross Island.
- 1N/1-33L(1) (Fred Meyer, Inc.) is a 195-foot drilled well in gravel in the westside business district.
- 1N/1-34N(6) (Pacific Power & Light Company - Pittock Block) is a 96.6-foot drilled well in gravel in the westside business district.

REFERENCES

- Brown, S. G., 1963, Problems of utilizing ground water in the westside business district of Portland, Oregon: U. S. Geol. Survey Water Supply Paper 1619-0.
- Griffin, W. C., et al., 1956, Water resources of the Portland, Oregon and Vancouver, Washington area: U. S. Geol. Survey Circular 372.
- Hogenson, G. M., 1962, Ground water in the East Portland area, Oregon: U. S. Geological Survey open-file report.

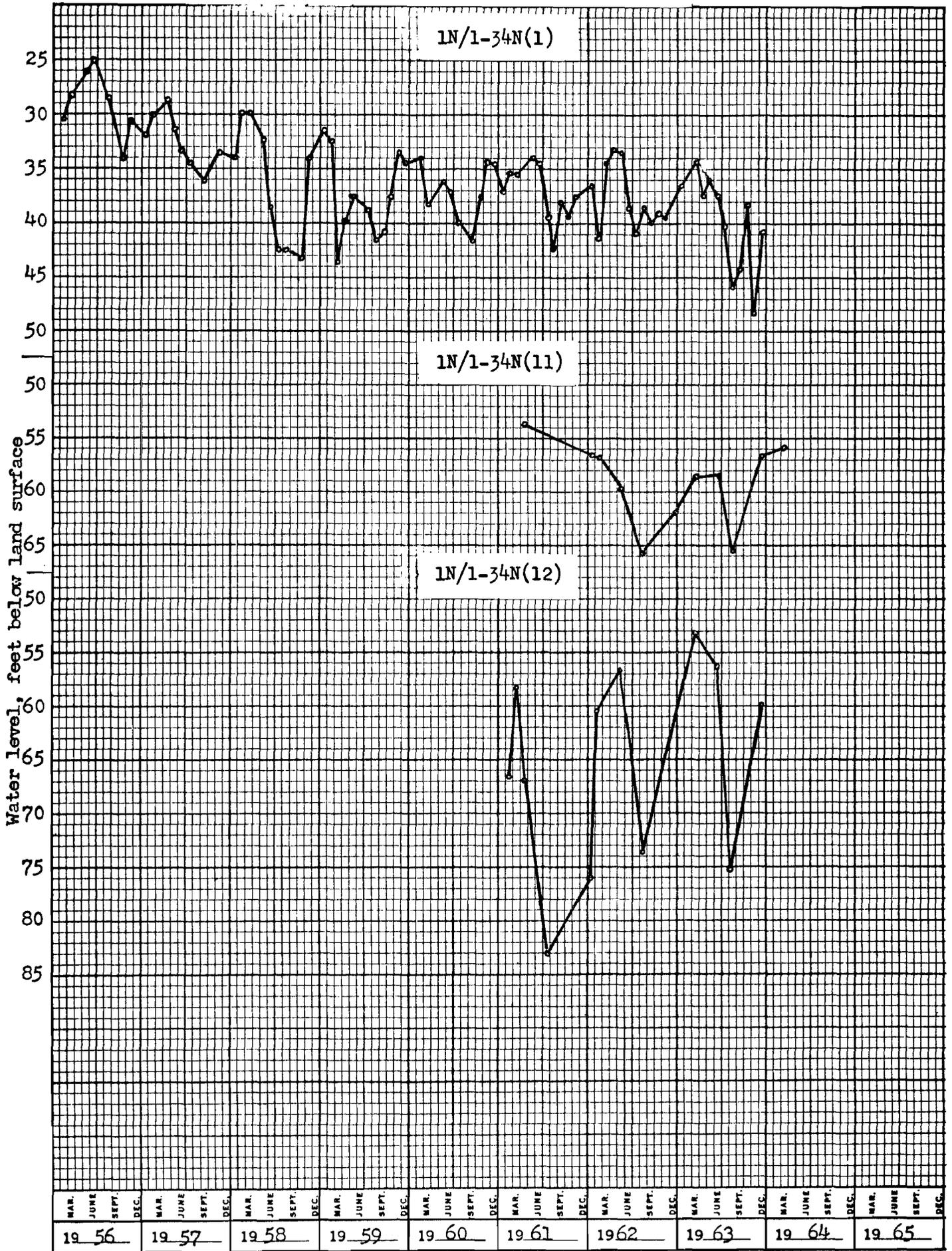
PORTLAND METROPOLITAN AREA (2)



PORTLAND METROPOLITAN AREA (2)

- 1N/1-34N(1) (Weisfield's Inc.) is a 155-foot drilled well in gravel in the westside business district. Periodic water level measurements available from 1940 to date.
- 1N/1-34N(11) (Dirks Medical Center) is a 418-foot drilled well in basalt in the westside business district.
- 1N/1-34N(12) (Federal Reserve Bank) is a 755-foot drilled well in basalt in the westside business district.

PORTLAND METROPOLITAN AREA (2)



THE DALLES AREA (3)

The area in and around Dalles City has been declared a "Critical Ground Water Area" because of declining water levels. The ground-water reservoir developed by most of the municipal, industrial and irrigation wells develop ground water from a very permeable zone in the Columbia River Basalt Formation. This zone has been named The Dalles Ground Water Reservoir and is locally known "The Dalles Pool". The 1963 spring high position of the water level in The Dalles Ground Water Reservoir was at an altitude of about 44 feet or some 29 feet below the adjacent level of the Bonneville pool in the Columbia River. Without a reduction in ground-water withdrawals or an increase in ground-water recharge, ground water levels in The Dalles Ground Water Reservoir will continue to decline.

A slight decline has also been observed in the confined ground-water reservoir located in the Mill Creek Valley, (1N/12-13N(1) and the rate of decline in the Three Mile Creek Valley has decreased (1N/13-14L(1).

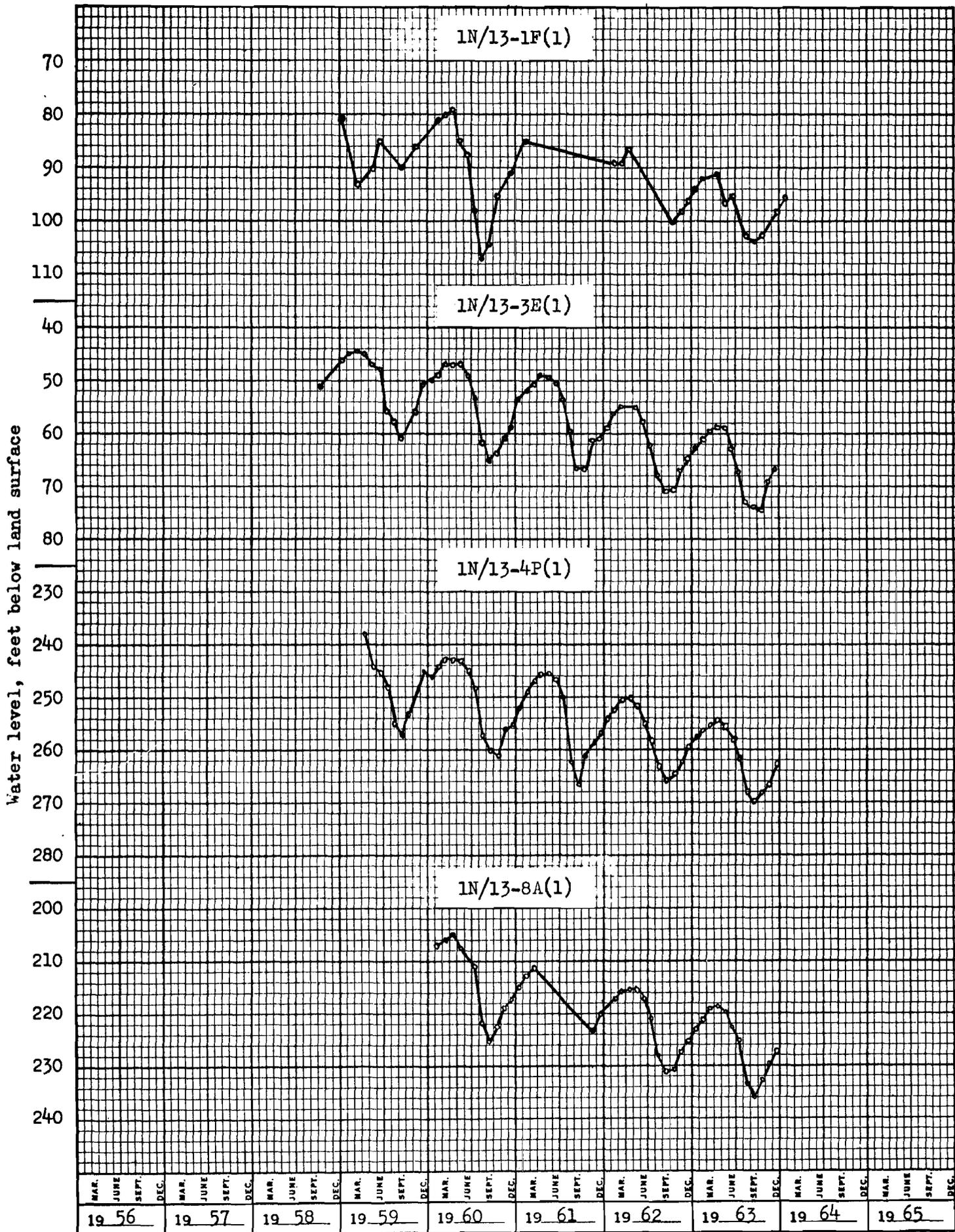
OBSERVATION WELLS

- 1N/13-1F(1) (Three Mile Irr. Coop.) is a 335-foot drilled well in The Dalles Ground Water Reservoir.
- 1N/13-3E(1) (Dalles City - City Hall) is a 200.5-foot drilled well in The Dalles Ground Water Reservoir. Periodic water level measurements available from 1926-1930; 1951-1952 and 1958 to date.
- 1N/13-4P(1) (Dalles City - Marx Well) is a 570-foot drilled well in The Dalles Ground Water Reservoir.
- 1N/13-8A(1) (G. S. Williams) is a 341-foot drilled well in The Dalles Ground Water Reservoir.

REFERENCES

- Piper, A. M., 1932, Geology and ground-water resources of The Dalles Region, Oregon: U. S. Geological Survey Water Supply Paper 659-B.

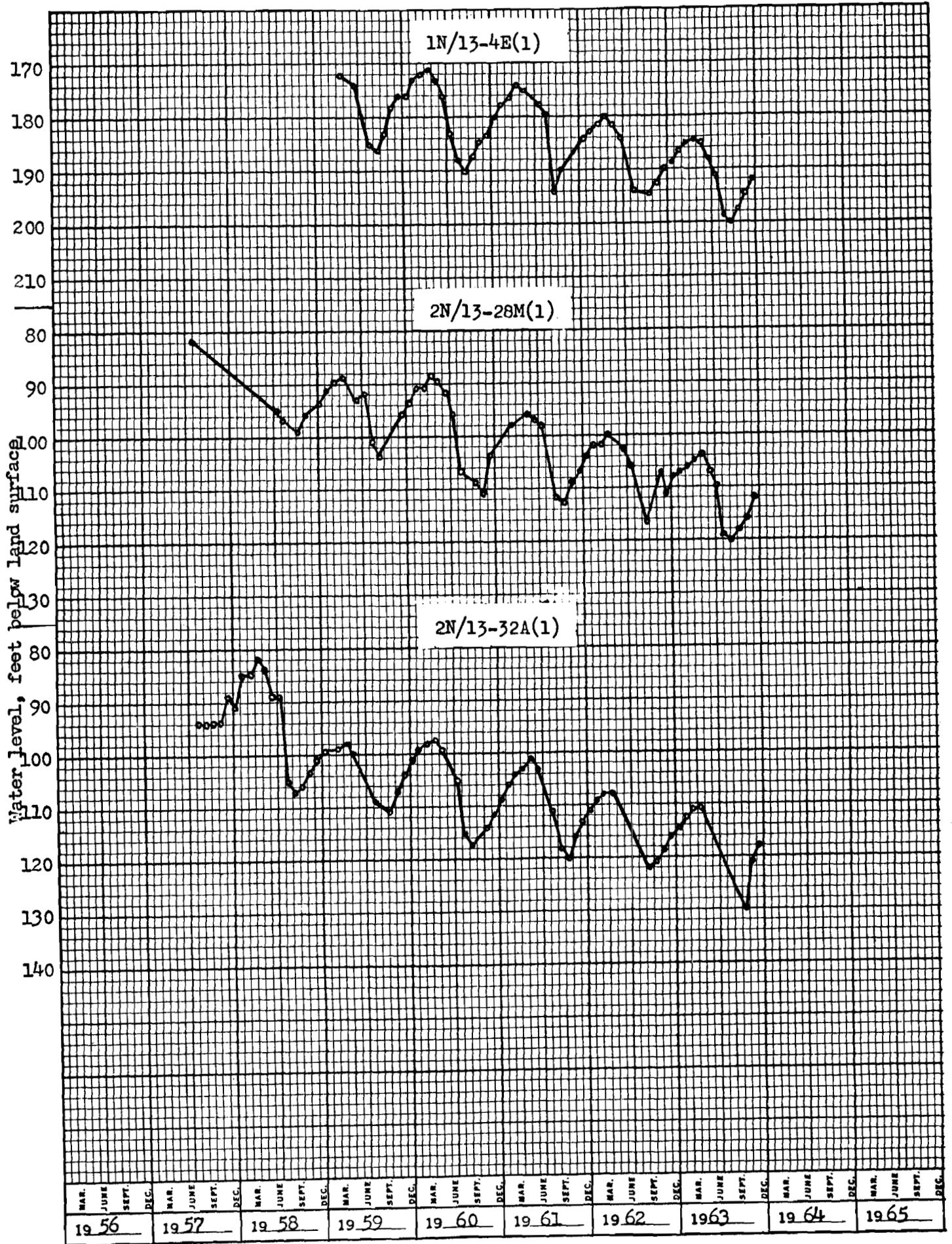
THE DALLES AREA (3)



THE DALLES AREA (3)

- 1N/13-4E(1) (Odd Fellows Cemetery) is a 306-foot drilled well in The Dalles Ground Water Reservoir.
- 2N/13-28M(1) (Harvey Aluminum Co.) is a 314-foot drilled well in The Dalles Ground Water Reservoir.
- 2N/13-32A(1) (Chenowith Irrigation Coop.) is a 275-foot drilled well in The Dalles Ground Water Reservoir.

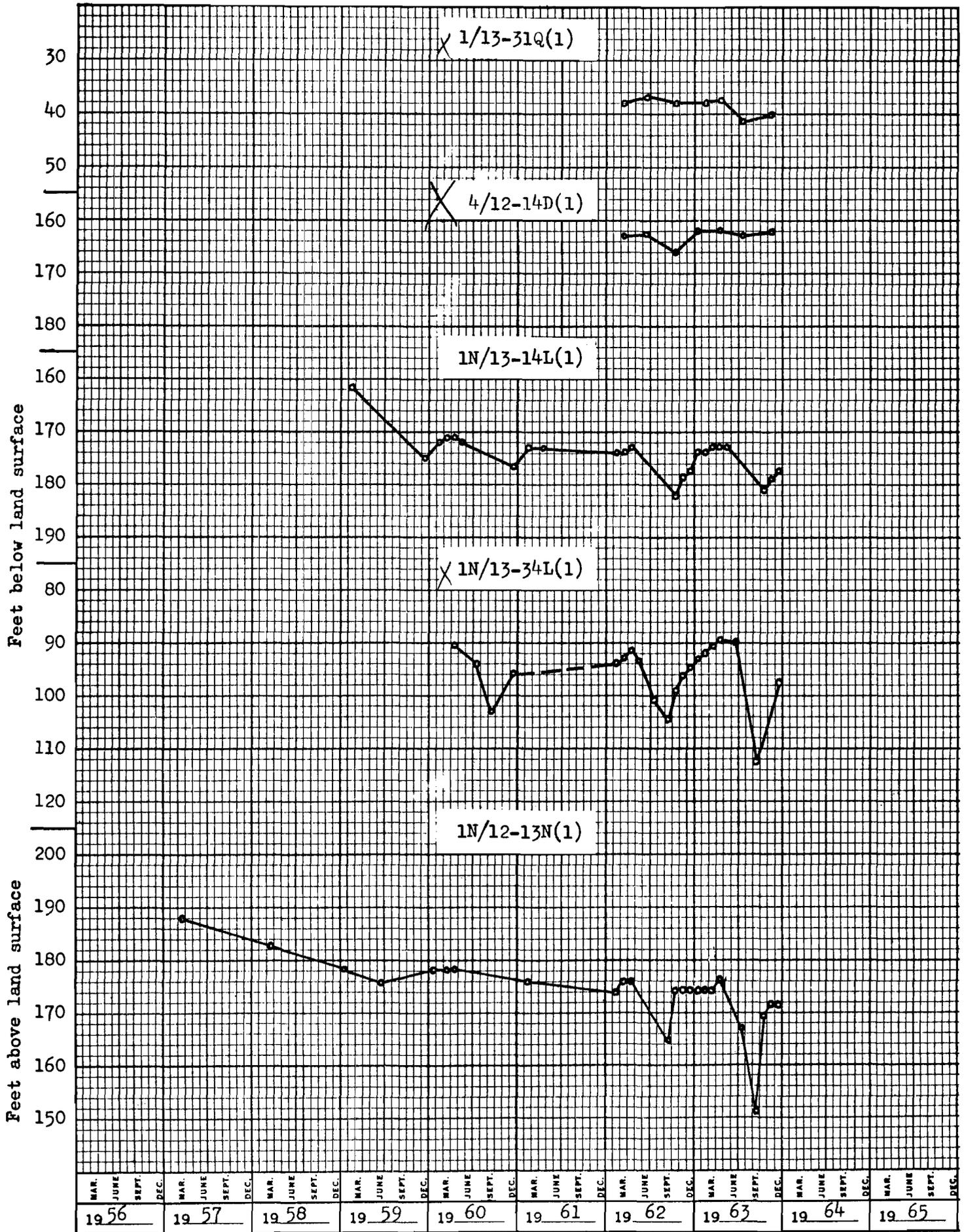
THE DALLES AREA (3)



THE DALLES AREA (3)

- 1/13-31Q(1) (Harvey McAllister) is a 111-foot drilled well in basalt located near Dufur.
- 4/12-14D(1) (Wamic Water Coop. Assoc.) is a 255-foot drilled well in basalt located in Wamic.
- 1N/13-14L(1) (Dewey Wagenblast) is a 230-foot drilled well in basalt located in the Three Mile Creek Valley.
- 1N/12-13N(1) (Julius Sandoz) is a 572-foot drilled artesian well in basalt located in the Mill Creek Valley.

THE DALLES AREA (3)



COLUMBIA SLOPE AREA (4)

The Columbia Slope area includes the broad northward sloping area in northwestern Umatilla County and Northern Morrow County. A large part of this area is underlain by glaciofluvial deposits of sand and gravel that were deposited by the ancestral Columbia River. These strata are underlain by the Columbia River Basalt Formation. It has been reported that a number of deep wells in the basalt in this area have shown some decline in recent years. The observation well net is being expanded in this area to learn more about the area and extent of this decline.

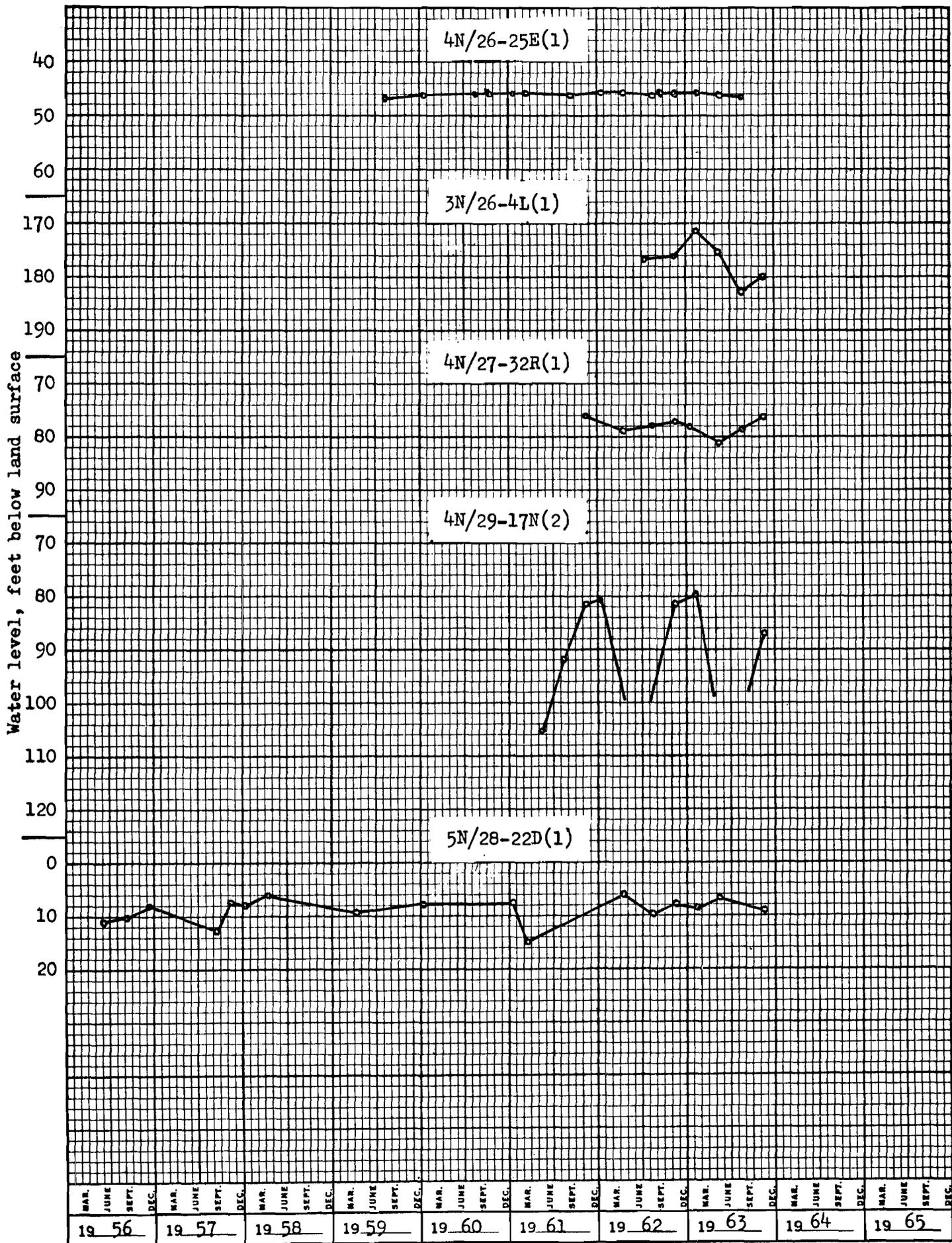
OBSERVATION WELLS

- 4N/26-25E(1) (Unknown) is a 170-foot drilled well located about four miles west of Ordnanee. Periodic water level measurements available from 1953-1954 and 1959 to date.
- 3N/26-4L(1) (Luther Cramer) is a 623-foot drilled well in basalt located about eight miles southwest of Ordnanee.
- 4N/27-32R(1) (R. Holzappel) is a 310-foot drilled well in basalt located about two miles southwest of Ordnanee.
- 4N/29-17N(2) (Ben Dreyer) is a 207-foot drilled well in white sand located about one mile north of Stanfield.
- 5N/28-22D(1) (Munson Auto Court) is a 189-foot drilled well in basalt located about three miles south of Umatilla. Periodic water level measurements available from 1953 to date.

REFERENCES

- Hogenson, G. M., 1964, Geology and ground water of the Umatilla River Basin, Oregon: U. S. Geological Survey Water Supply Paper 1620.

COLUMBIA SLOPE AREA (4)



MILTON-FREEWATER AREA (5)

Milton-Freewater is located at the head of a large alluvial fan where the Walla Walla River flows out of the Blue Mountains. This fan which is in large part composed of coarse gravels is recharged by the Walla Walla River and by irrigation diversions. High water level in many of the wells occurs during the irrigation season.

The alluvial fan is underlain at depth by the Columbia River Basalt Formation. Some of the deep wells in the Milton-Freewater area, which develop ground water from the basalt, have been declining in recent years. New observation wells are being established to learn more about this decline.

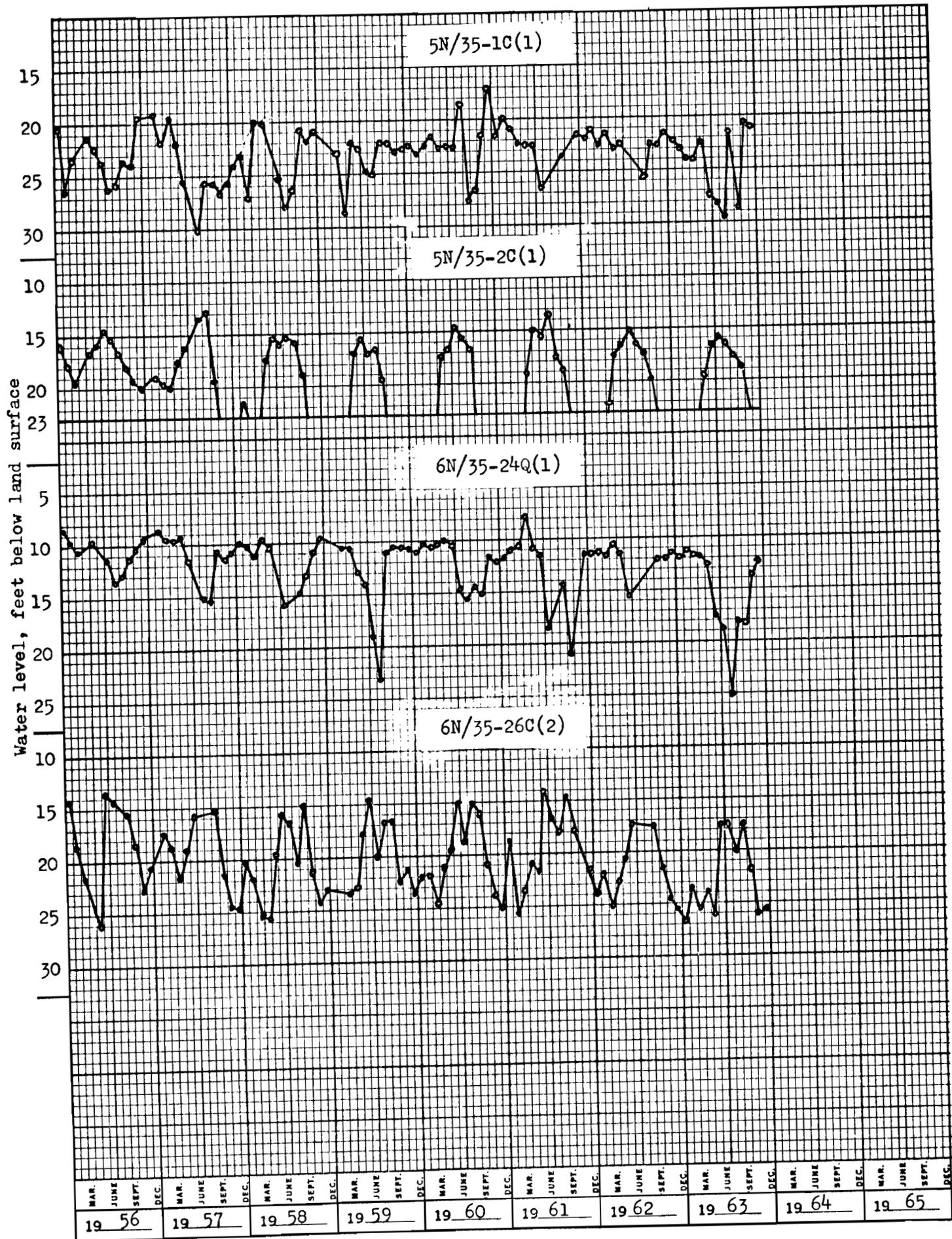
OBSERVATION WELLS

- 5N/35-1C(1) (Cecil Brodie) is a 37-foot dug well in gravel located near Milton-Freewater. Periodic water level measurements available from 1933 to date.
- 5N/35-2C(1) (E. J. McSherry) is a 23-foot dug well in sand and gravel located about one mile west of Milton-Freewater. Periodic water level measurements available from 1933 to date.
- 6N/35-24Q(1) (E. Miller) is a 165-foot dug and drilled well in gravel located about three miles north of Milton-Freewater. Periodic water level measurements available from 1933 to date.
- 6N/35-26C(2) (Earl Ransom) is a 110-foot dug and drilled well in gravel located about two miles north of Milton-Freewater. Periodic water level measurements available from 1933 to date.

REFERENCES

- Newcomb, R. C., 1951, Preliminary report on the ground-water resources of the Walla Walla Basin, Washington-Oregon: U. S. Geol. Survey open-file report.

MILTON FREEWATER AREA (5)



GRANDE RONDE VALLEY (6)

The Grande Ronde Valley is a broad, deep, structural valley that has been partially filled with lake and stream deposited clays, silts, sands and gravels. The coarse-grained sand and gravel deposits are confined chiefly to the alluvial fans that have formed where the larger streams flow into the valley. The deeper materials in the basin fill are chiefly fine-grained silts and clays.

The basin is underlain by the Columbia River Basalt Formation which contains confined ground water. Wells drilled into the basalt generally flow at the surface. Many new irrigation wells have been drilled during the past year. Some of these develop several thousand gallons per minute from the sand and gravel deposits. New observation wells are being established in this area to evaluate the effect of these new ground-water developments.

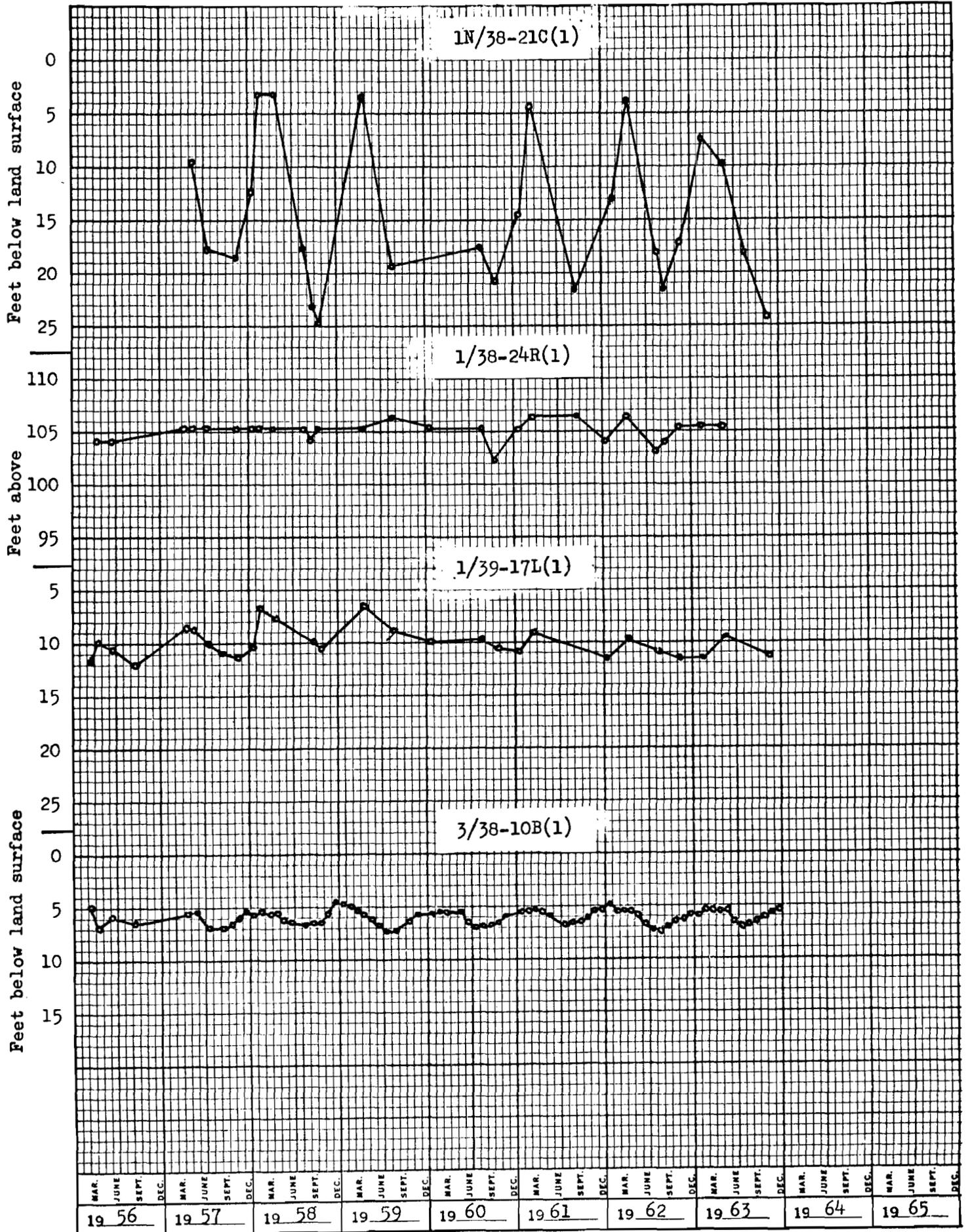
OBSERVATION WELLS

- 1N/38-21C(1) (Mr. Schmittel) is a 67-foot drilled well in gravel located about nine miles southwest of Elgin along Willow Creek.
- 1/38-24R(1) (H. L. Wagner) is a 1,150-foot artesian well in basalt located near Imbler. Periodic water level measurements available from 1950 to date.
- 1/39-17L(1) (A. F. Furman) is a 44.6-foot drilled well in sand located near Imbler. Periodic water level measurements available from 1940 to date.
- 3/38-10B(1) (Union County) is a 11-foot dug well in sand and gravel located near the La Grande golf course. Periodic water level measurements available from 1936 and 1938 to date.

REFERENCES

- Hampton, E. R. and Brown, S. G., 1964, Geology and ground-water resources of the Upper Grande Ronde River Basin Union County, Oregon: U. S. Geological Survey Water Supply Paper 1597.

GRANDE RONDE VALLEY (6)



BAKER VALLEY (7)

The Baker Valley is a broad structural basin that has been partially filled with lake and stream deposits. The coarser ground sand and gravel deposits are confined chiefly to the large alluvial fans that have been formed by streams flowing out of the Elkhorn Mountains.

At many places in the Baker Valley the water table is at or near land surface which indicates that the ground-water reservoirs are full. Ground-water developments in parts of the Valley would aid in solving drainage problems.

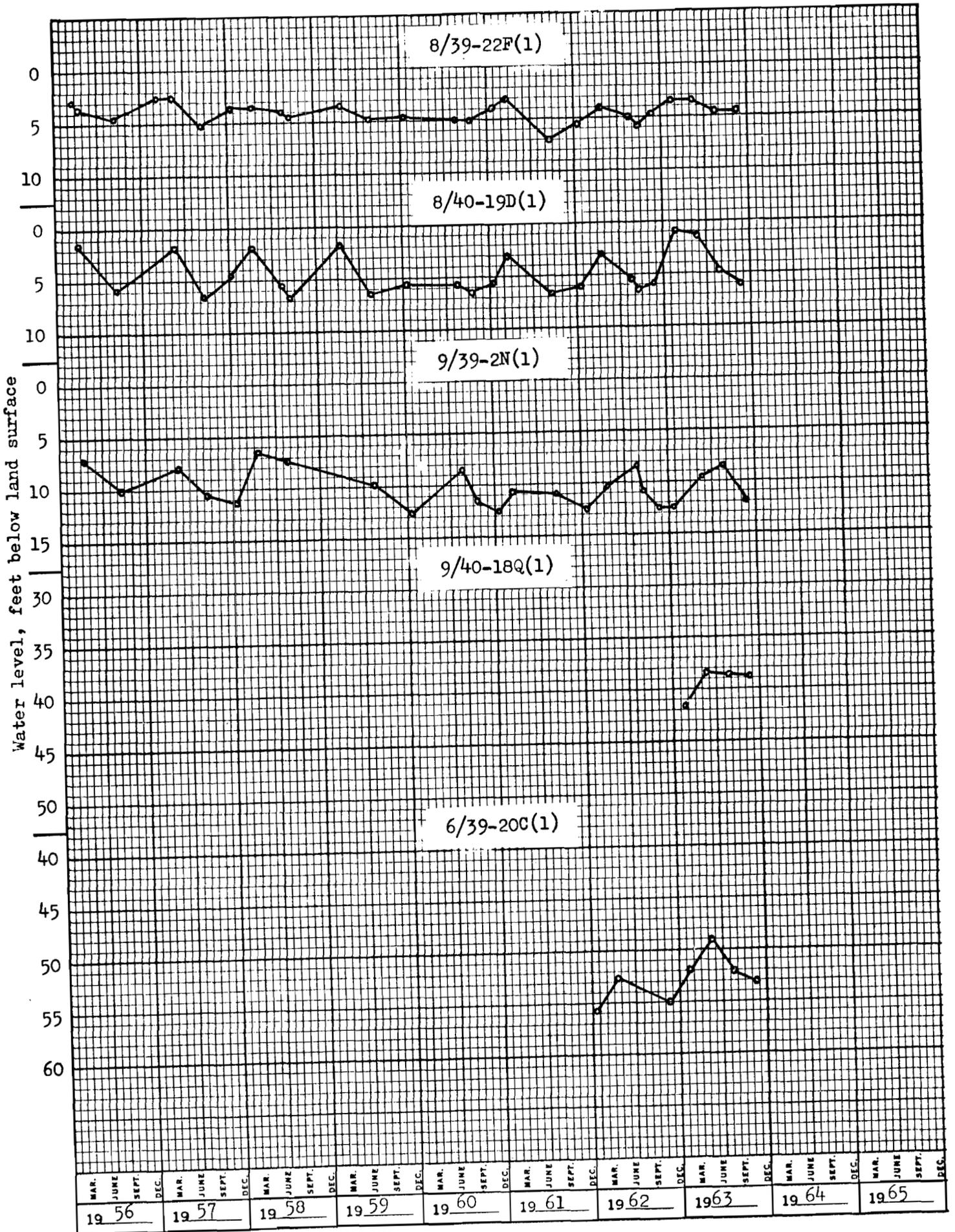
OBSERVATION WELLS

- 8/39-22F(1) (Baker County) is an 11-foot dug well in sand and gravel in the Baker Valley. Periodic water level measurements available for 1936 and from 1938 to date.
- 8/40-19D(1) (Baker County) is a 9-foot dug well in sand and gravel in the Baker Valley. Periodic water level measurements available for 1936 and from 1938 to date.
- 9/39-2N(1) (Chris Lee) is a 321-foot drilled well in the Baker Valley. Periodic water level measurements available from 1949 to date.
- 9/40-18Q(1) (Paul Hill) is a 575-foot drilled well in gravel in the Baker Valley.
- 6/39-20C(1) (Ed McCause) is a 562-foot drilled well in gravel near North Powder.

REFERENCES

- Trauger, Frederick D., 1951, Ground-water resources of Baker Valley, Baker County Oregon: U. S. Geological Survey open-file report.

BAKER VALLEY (7)



COW VALLEY AREA (8)

Cow Valley is a small upland basin in Northern Malheur County that has been determined as a critical ground-water area on the basis of declining water levels. This area has been closed to further ground-water developments and ground water withdrawals have been restricted to the duty of water which is 3 acre feet per acre of irrigated land.

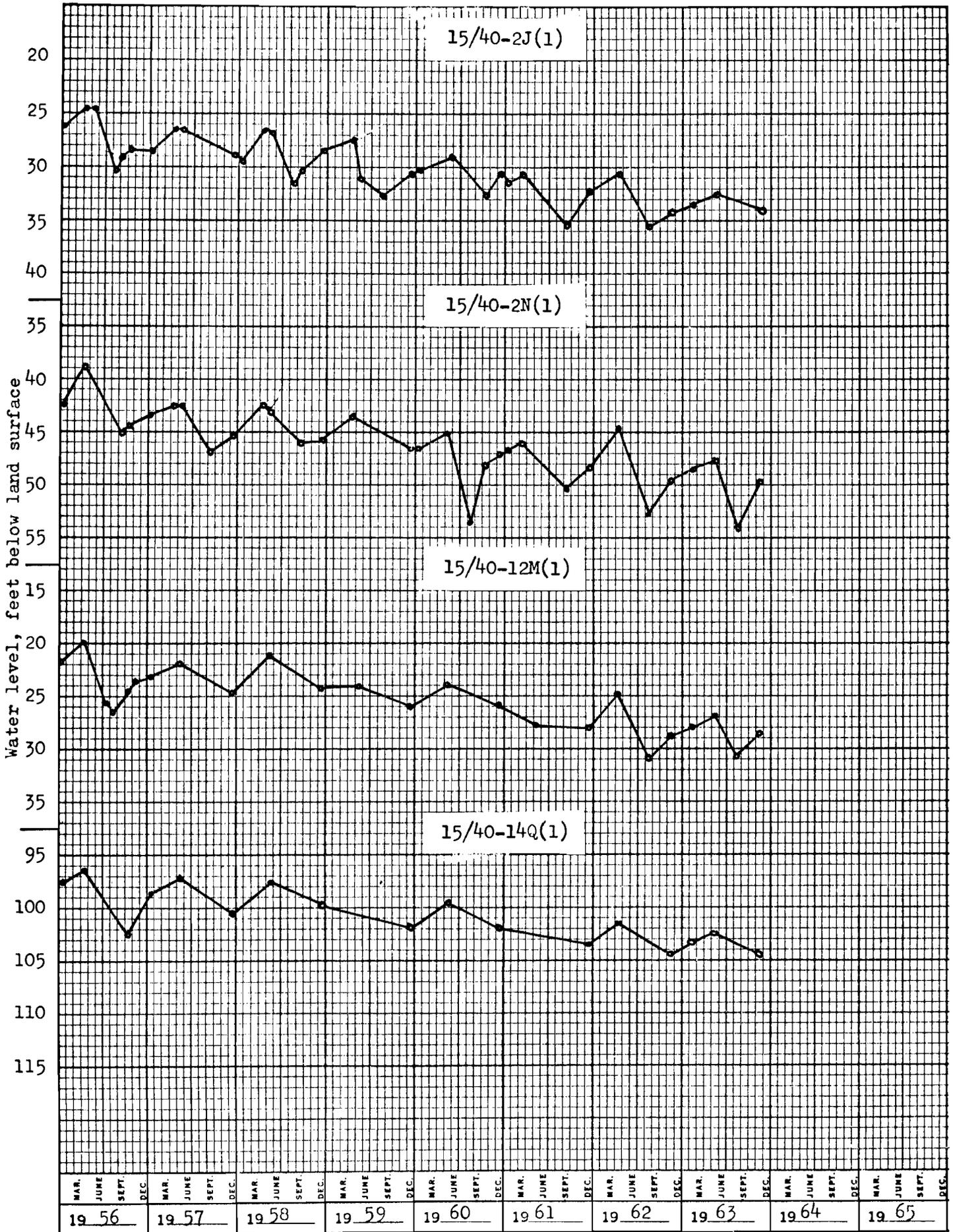
OBSERVATION WELLS

- 15/40-2J(1) (Max Holloway #1) is a 421-foot drilled well in the Cow Valley Ground Water Reservoir. Periodic water level measurements available from 1950 to date.
- 15/40-2N(1) (Crow #2) is a 310-foot drilled well in the Cow Valley Ground Water Reservoir. Periodic water level measurements available from 1950 to date.
- 15/40-12M(1) (Davis #3) is a 280-foot drilled well in the Cow Valley Ground Water Reservoir. Periodic water level measurements available from 1955 to date.
- 15/40-14Q(1) (Crow #8) is a 248-foot drilled well in the Cow Valley Ground Water Reservoir. Periodic water level measurements available from 1954 to date.

REFERENCES

Brown, S. G., and Newcomb, R. C., 1962, Ground-water resources of Cow Valley, Malheur County, Oregon: U. S. Geological Survey Water Supply Paper 1619-M.

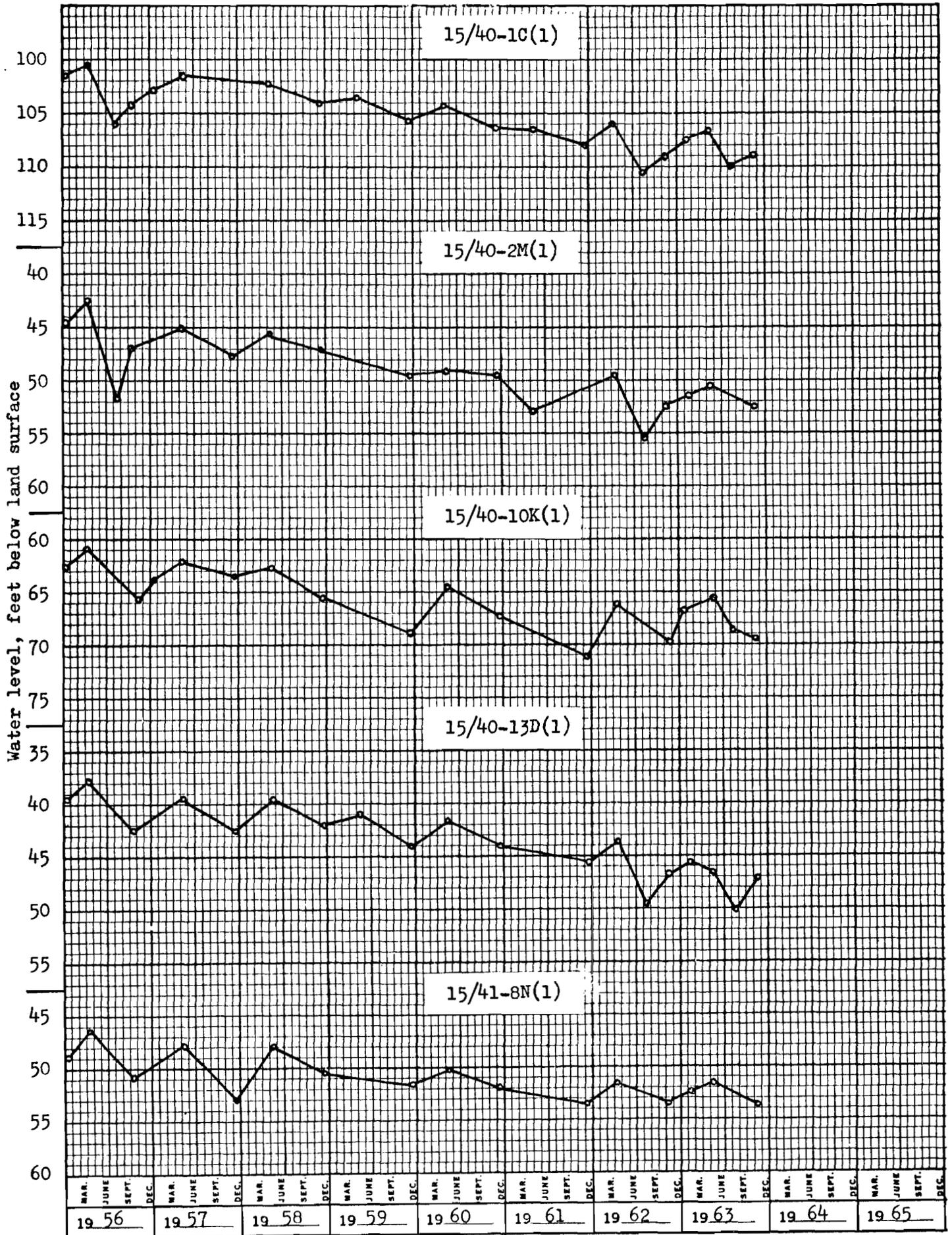
COW VALLEY AREA (8)



COW VALLEY AREA (8)

- 15/40-1C(1) (Anderson) is a 350-foot drilled well in the Cow Valley Ground Water Reservoir. Periodic water level measurements available from 1954 to date.
- 15/40-2M(1) (Max Holloway #2) is a 535-foot drilled well in the Cow Valley Ground Water Reservoir. Periodic water level measurements available from 1954 to date.
- 15/40-10K(1) (Crow #9) is a 1,000-foot drilled well in the Cow Valley Ground Water Reservoir. Periodic water level measurements available from 1954 to date.
- 15/40-13D(1) (Davis #1) is a 300-foot drilled well in the Cow Valley Ground Water Reservoir. Periodic water level measurements available from 1955 to date.
- 15/41-8N(1) (Crow #6) is a 338-foot drilled well in the Cow Valley Ground Water Reservoir. Periodic water level measurements available from 1963 to date.

COW VALLEY AREA (8)



HARNEY BASIN (9)

The Harney Basin is a large closed structural basin that was partially filled with lake and stream deposits and volcanic debris.

The water table lies close to land surface beneath the entire basin floor and the underlying ground-water reservoirs are near full capacity. In some parts of the basin underlying materials are fine-grained and deep wells have been constructed in search of coarse-grained materials.

The availability of electric power and the subdivision of some of the larger ranches in the area has sparked the development of ground-water supplies for irrigation. Many new observation wells have been established to determine the effects of these new developments.

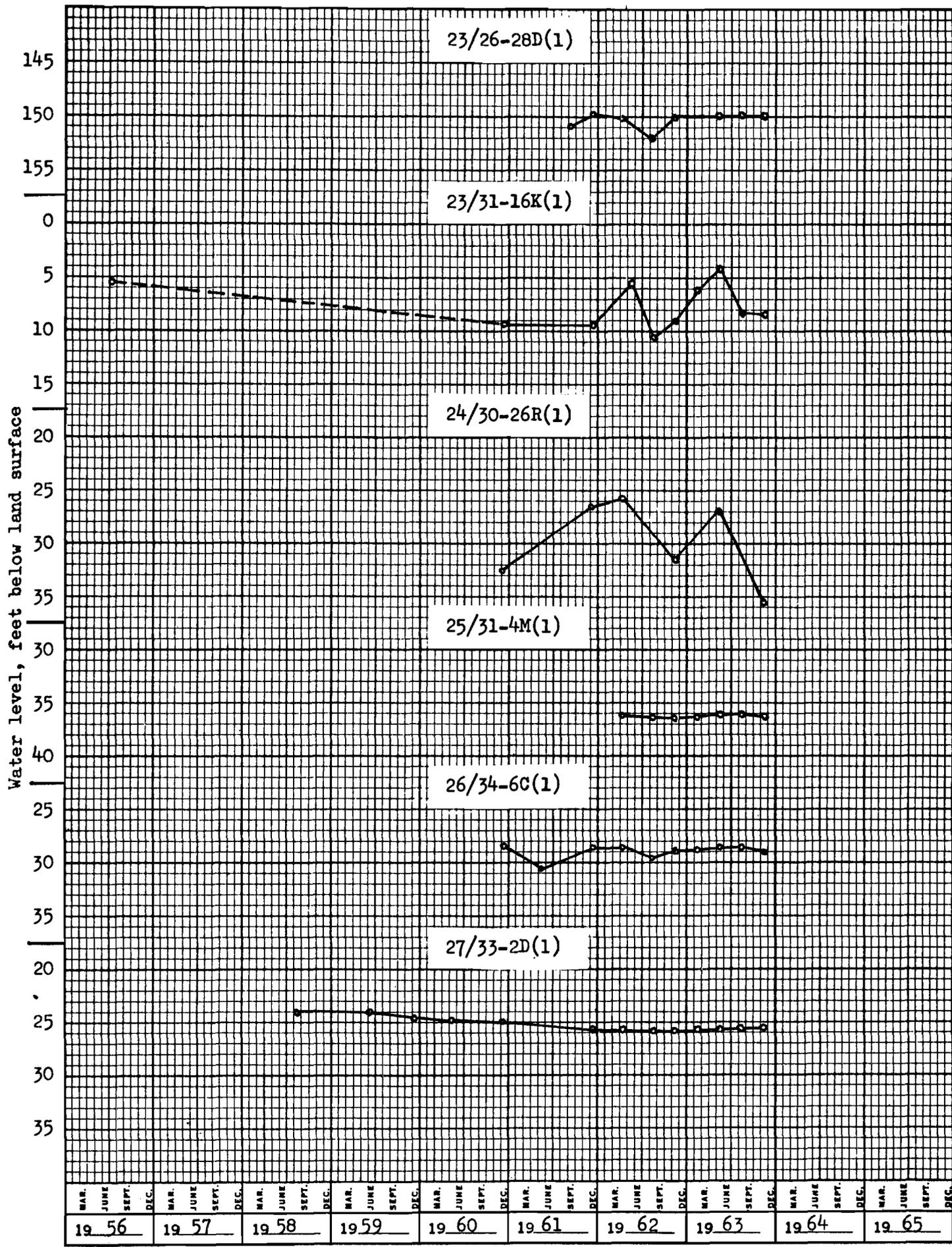
OBSERVATION WELLS

- 23/26-28D(1) (Unknown) is an unused drilled well in lava located about 8 miles west of Riley.
- 23/31-16K(1) (T. Allen Jones) is a 300-foot drilled well in gravel located about 2 miles west of Burns. Periodic water level measurements available from 1930-1932, 1956 and 1960 to date.
- 24/30-26R(1) (John Campbell) is a 501-foot drilled well in sand and gravel located about 9 miles southwest of Burns.
- 25/31-4M(1) (James Stahl) is a 170-foot drilled well in sand and gravel located about 10 miles southeast of Burns.
- 26/34-6C(1) (John Fecht) is a 260-foot drilled well in sand located about $4\frac{1}{2}$ miles south of Crane.
- 27/33-2D(1) (R. F. Upton) is a 176-foot drilled well in lava and cinders located about 2 miles southwest of New Princeton.

REFERENCES

- Piper, A. M. et al., 1939, Geology and ground-water resources of the Harney Basin Oregon: U. S. Geological Survey Water Supply Paper 841.

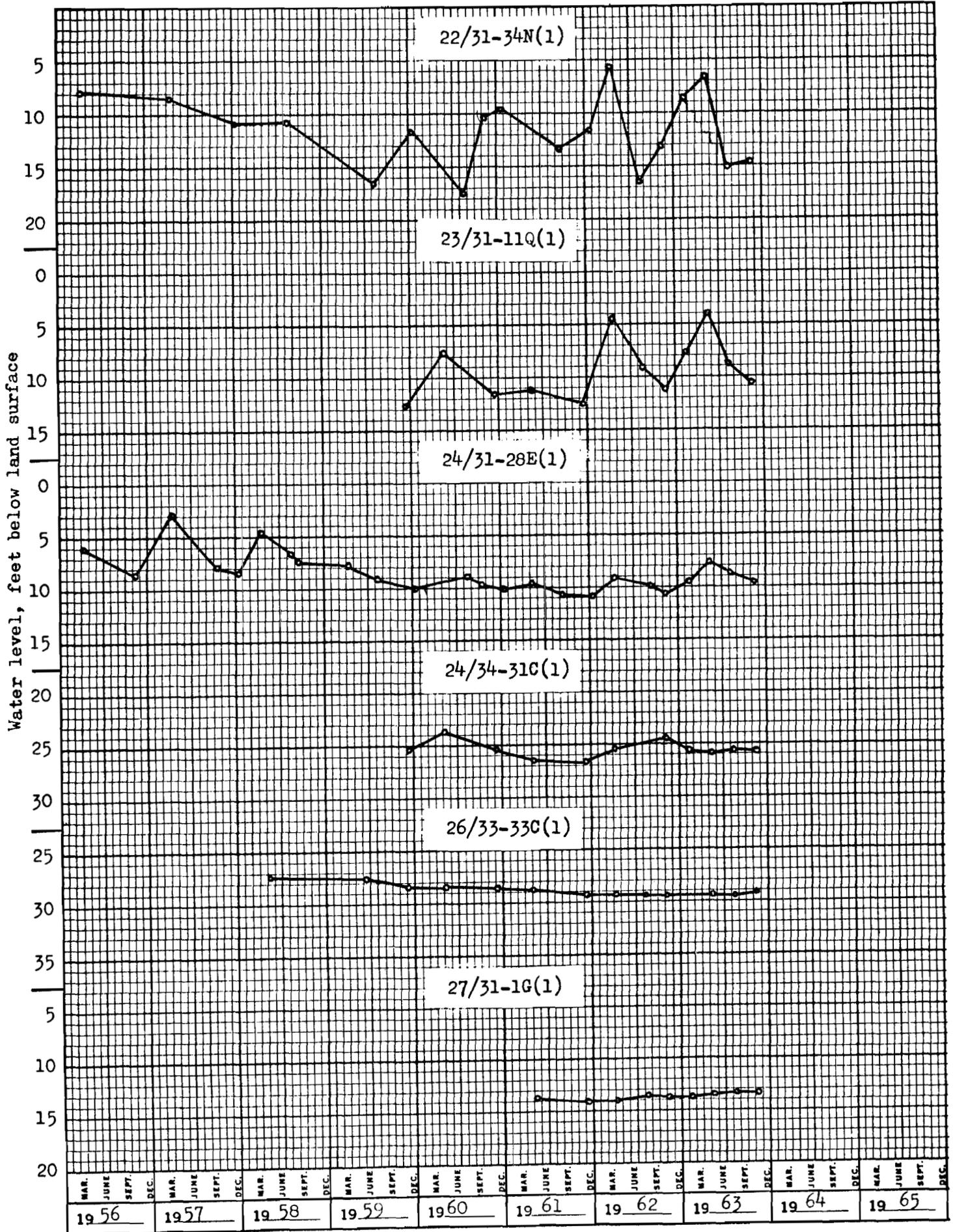
HARNEY BASIN (9)



HARNEY BASIN (9)

- 22/31-34N(1) (L. F. Lazaus) is a 288-foot drilled well in sand, gravel and basalt located about 3 miles northeast of Burns. Periodic water level measurements available from 1930-1936 and 1938 to date.
- 23/31-11Q(1) (E. Sewell) is a 120-foot drilled well in gravel located about 4 miles east of Burns.
- 24/31-28E(1) (Harney County) is a 17-foot dug well in gravel located about 9 miles southeast of Burns. Periodic water level measurements available from 1936 and 1938 to date.
- 24/34-31C(1) (John Rossberg) is a 305-foot drilled well in lava and cinders located about 2 miles north of Crane.
- 26/33-33C(1) (A. B. Hann) is a 300-foot drilled well in cinders located about $3\frac{1}{2}$ miles west of New Princeton.
- 27/31-1G(1) (John Crow) is a 118-foot drilled well in basalt and cinders located near the south shore of Malheur Lake.

HARNEY BASIN (9)



FORT ROCK AREA (10)

The Fort Rock area is a broad structural basin in Northern Lake County and includes the Christmas Lake area and Fossil Lake area.

Recent subdivision of large tracts of land in this basin has sparked the construction of wells and the development of ground water supplies. Numerous water level measurements throughout the area show a marked similarity in the fluctuations of the water table. In general, the trend of water levels in this area is related to long term changes in the amount of annual precipitation occurring in the surrounding upland areas.

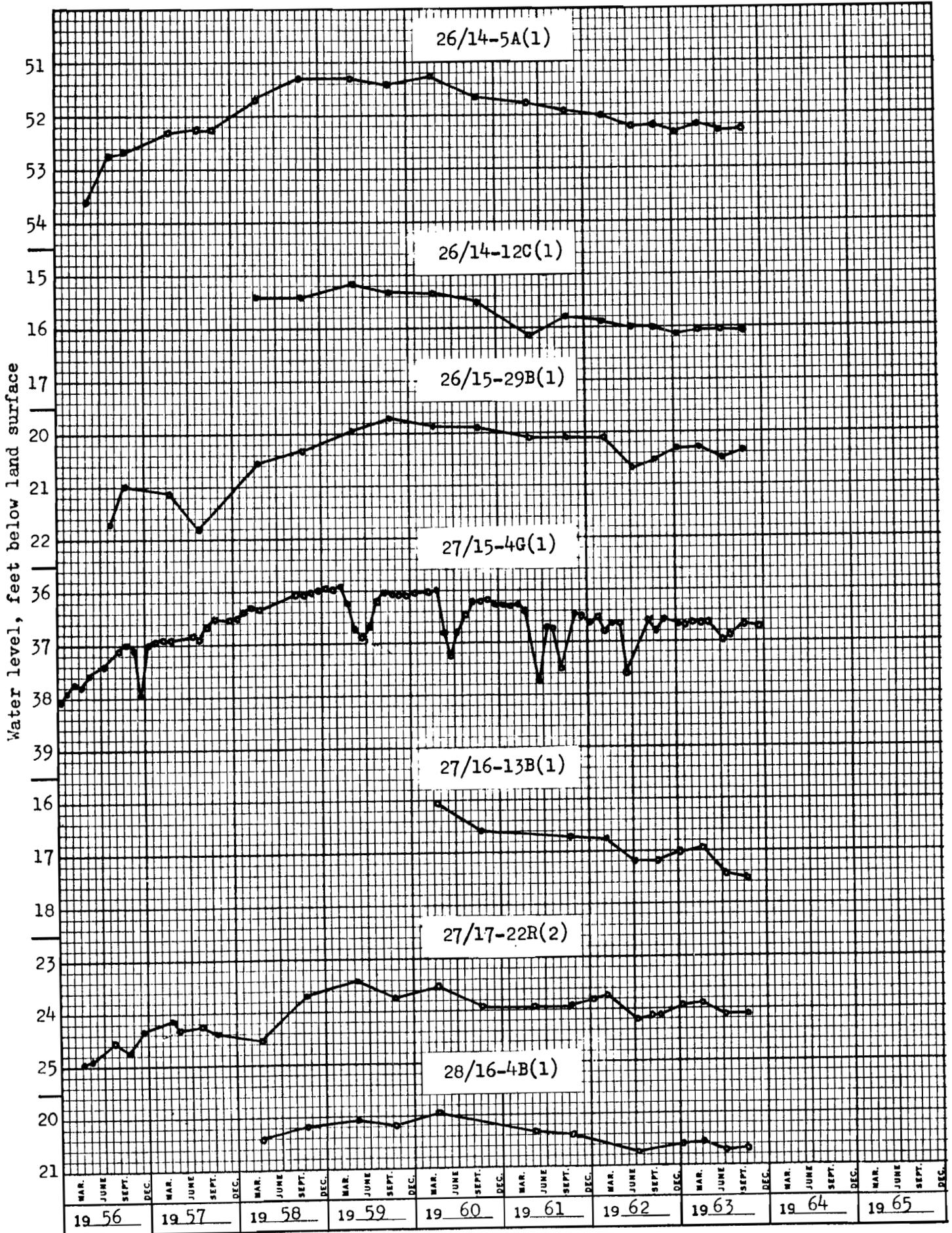
OBSERVATION WELLS

- 26/14-5A(1) (D. A. Busch) is a 83.4-foot drilled well located about 1 mile west of Fort Rock.
- 26/14-12C(1) (Elmer Kohler) is a 200-foot drilled well in sand located about 2½ miles southeast of Fort Rock.
- 26/15-29B(1) (Delbert Wilson) is a 230-foot drilled well in sand located about 7 miles southeast of Fort Rock.
- 27/15-4G(1) (M. Y. Parks) is a 257-foot drilled well in lava and cinders located about 9 miles southeast of Fort Rock. Periodic water level measurements available from 1932, 1935-36 and 1938 to date.
- 27/16-13B(1) (Bob Morehouse) is a 560-foot drilled well located in Christmas Lake Valley.
- 27/17-22R(2) (Century Ranch) is a 54-foot drilled well located in Christmas Lake Valley. Periodic water level measurements available from 1938, 1940-44 and 1946 to date.
- 28/16-4B(1) (L. V. Gray) is a 707-foot drilled well in lava located in Christmas Lake Valley.

REFERENCES

- Hampton, E. R., 1962, Geologic factors that control the occurrence and availability of ground water in the Fort Rock Basin, Lake County, Oregon: U. S. Geological Survey open-file report.
- Trauger, F. D., 1950, Basic ground water data in Lake County, Oregon: U. S. Geological Survey open-file report.

FORT ROCK AREA (10)



WARNER VALLEY (11)

Warner Valley is a long narrow structural valley located in southeastern Lake County. In general, the valley is bordered by fault block mountains that have contributed materials for the partial filling of this basin. This valley was the site of the spectacular "hot water" geyser that developed in a deep test well on the Crump Ranch a few years back.

In general, most of the ground-water reservoirs underlying this basin are filled and water levels are at or near land surface. It is believed that large supplies of ground water underlie this valley.

OBSERVATION WELLS

35/24-9J(1) (U.S.B.L.M.) is a 376-foot drilled well in basalt located about 8 miles north of Hart Lake. Periodic water level measurements available from 1949 to date.

36/24-27D(2)(Con Lynch) is a 255-foot drilled well located about one mile east of Plush.

36/24-33B(3)(Con Taylor) is a 262-foot drilled well in gravel and lava located about 1 mile east of Plush.

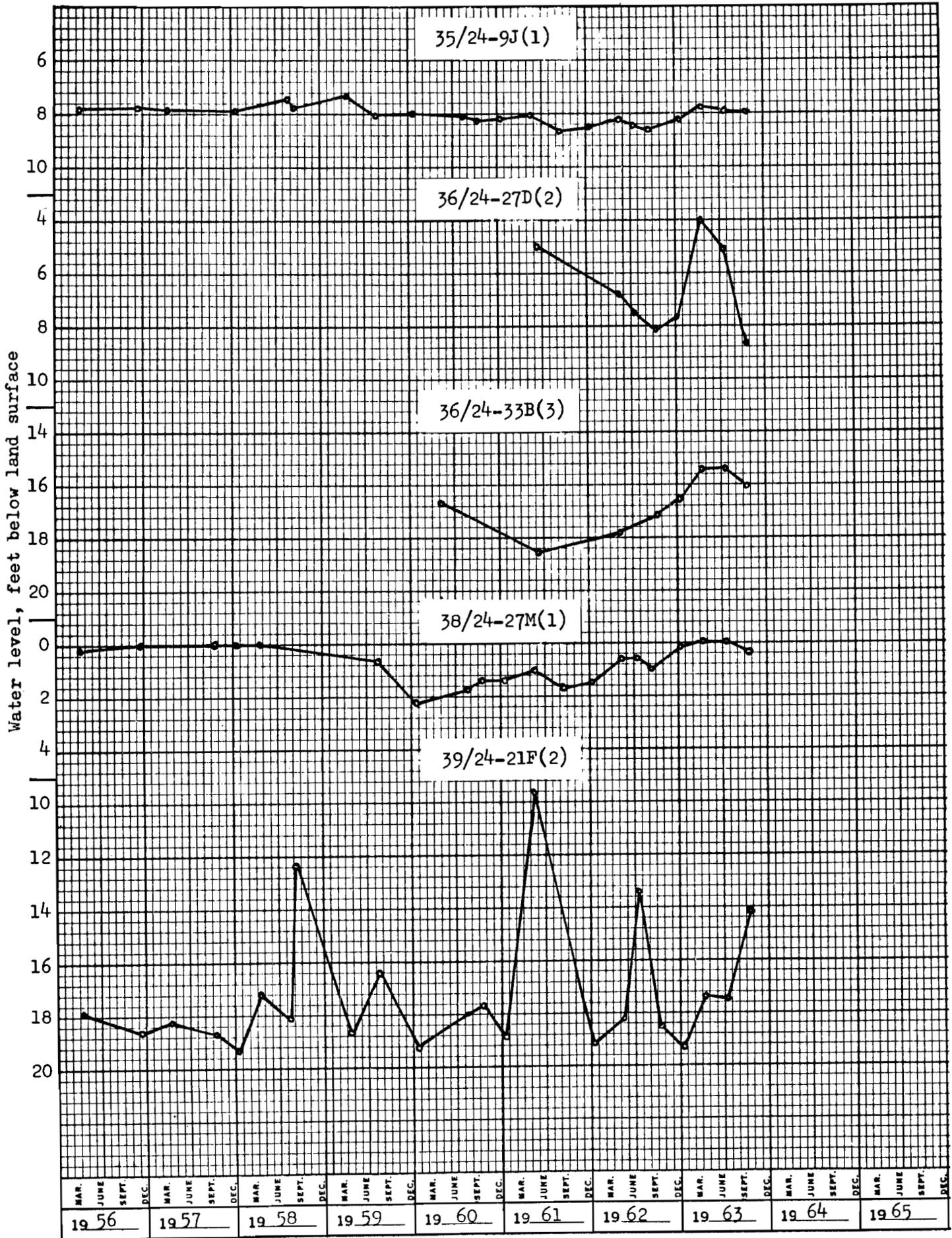
38/24-27M(1)(Charles Crump) is a 81-foot drilled well in gravel located near Crump Lake. Periodic water level measurements available from 1948 to date.

39/24-21F(2)(J. G. Dyke) is a 164-foot drilled well in gravel located in Adel. Periodic water level measurements available from 1948 to date.

REFERENCES

Trauger, Frederick D., 1951, Ground-water resources of Baker Valley, Baker County, Oregon: U. S. Geological Survey open-file report.

WARNER VALLEY (11)



GOOSE LAKE BASIN (12)

The Goose Lake Basin is a large structural basin located in southeastern Lake County. This basin has been partially filled with stream and lake deposits. The stream deposited sands and gravels occur chiefly where alluvial fans have been built into the basin. Some of the alluvial deposits have been buried by fine-grained lake sediments which tend to confine the ground water and cause some wells to flow.

In general, the water table stands close to land surface and a large quantity of ground water is in storage in this basin. Ground-water developments for irrigation are few in number but are expected to increase.

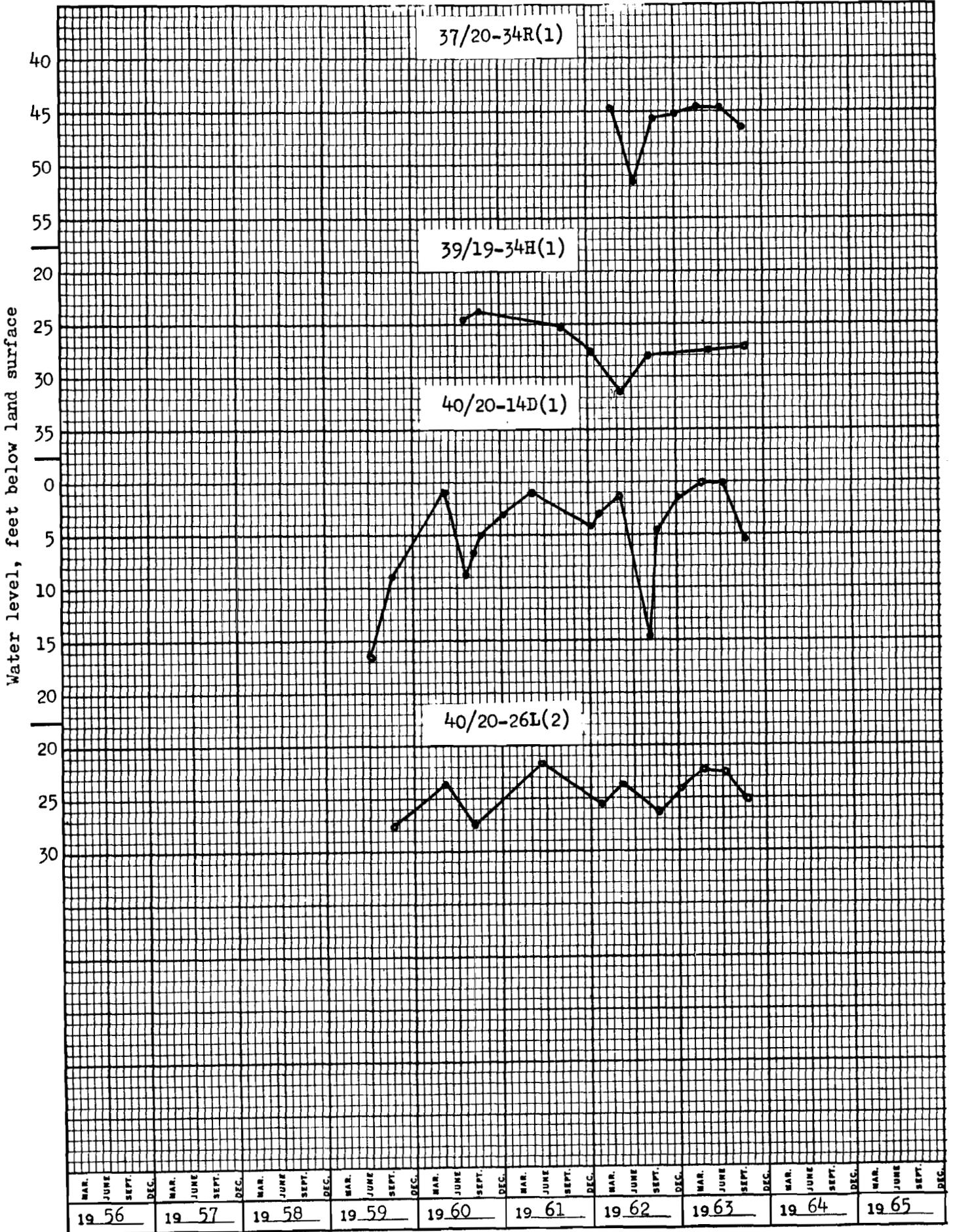
OBSERVATION WELLS

- 37/20-34R(1) (Robert Weir) is a 808-foot drilled well in gravel located about 9 miles north of Lakeview.
- 39/19-34H(1) (Mr. Hoffman) is a 110-foot drilled well in sand and gravel located about 7 miles west of Lakeview.
- 40/20-14D(1) (Snyder & Alexis) is a 305-foot drilled well in sand and gravel located about 5 miles south of Lakeview.
- 40/20-26L(2) (Neal Elliott) is a 140-foot drilled well in sand and gravel located about 8 miles south of Lakeview.

REFERENCES

Trauger, Frederick D., 1951, Ground-water resources of Baker Valley, Baker County, Oregon: U. S. Geological Survey open-file report.

GOOSE LAKE BASIN (12)



YONNA VALLEY (13)

Yonna Valley is a broad, structural basin in southern Klamath County that is bordered by fault-block ridges and mountains. Ground water occurs chiefly in lava flows and "cinder beds".

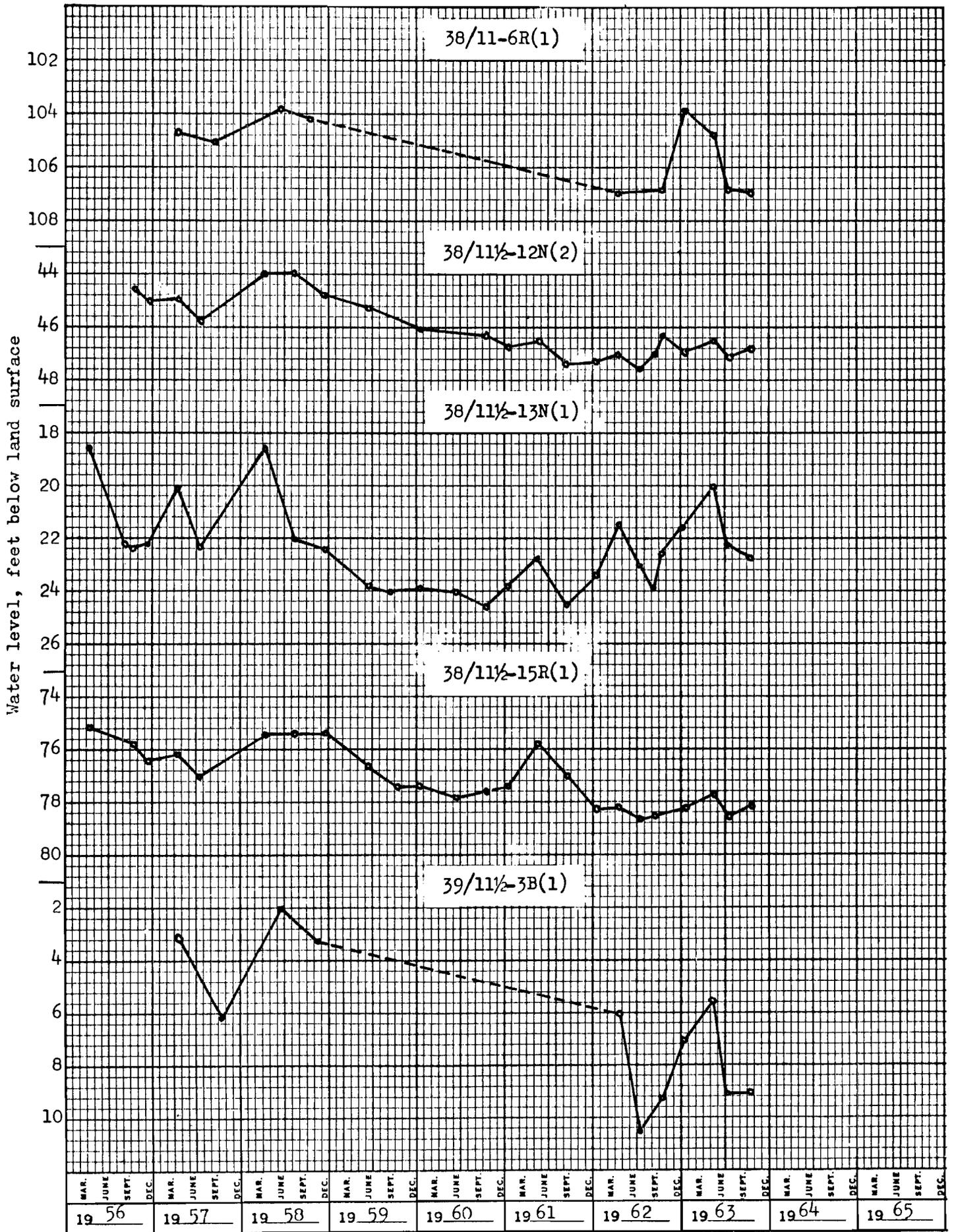
OBSERVATION WELLS

- 38/11-6R(1) (B. Jendrzewski) is a 194-foot drilled well in broken lava located in Yonna Valley.
- 38/11½-12N(2) (Frank Challis) is a 150-foot drilled well in porous lava located in Yonna Valley. Periodic water level measurements available from 1949 to date.
- 38/11½-13N(1) (William Konig) is a 600-foot drilled well in diatomaceous material located in Yonna Valley. Periodic water level measurements available from 1948 to date.
- 38/11½-15R(1) (L. M. & Loyd Hankins) is a 495-foot drilled well in lava and cinders located in Yonna Valley. Periodic water level measurements available from 1948 and 1950 to date.
- 39/11½-3B(1) (L. J. Horton) is a 102-foot drilled well located about 1 mile south of Dairy in Yonna Valley.

REFERENCES

- Meyers, Joseph D. and Newcomb, R. C., 1952, Geology and ground-water resources of the Swan Lake-Yonna Valleys area, Klamath County, Oregon: U. S. Geological Survey open-file report.
- Newcomb, R. C. & Hart, D. H., 1958, Preliminary report on the ground-water resources of the Klamath River Basin, Oregon: U. S. Geological Survey open-file report.

YONNA VALLEY (13)



SWAN LAKE VALLEY (14)

The Swan Lake Valley is a structurally closed basin located immediately west of Yonna Valley. This basin, which is bordered by fault block ridges, has been partially filled with fine-grained lake deposits. Ground water which is used chiefly for irrigation is generally developed from the volcanic rocks and associated sediments that underlie or lie adjacent to the lake deposits.

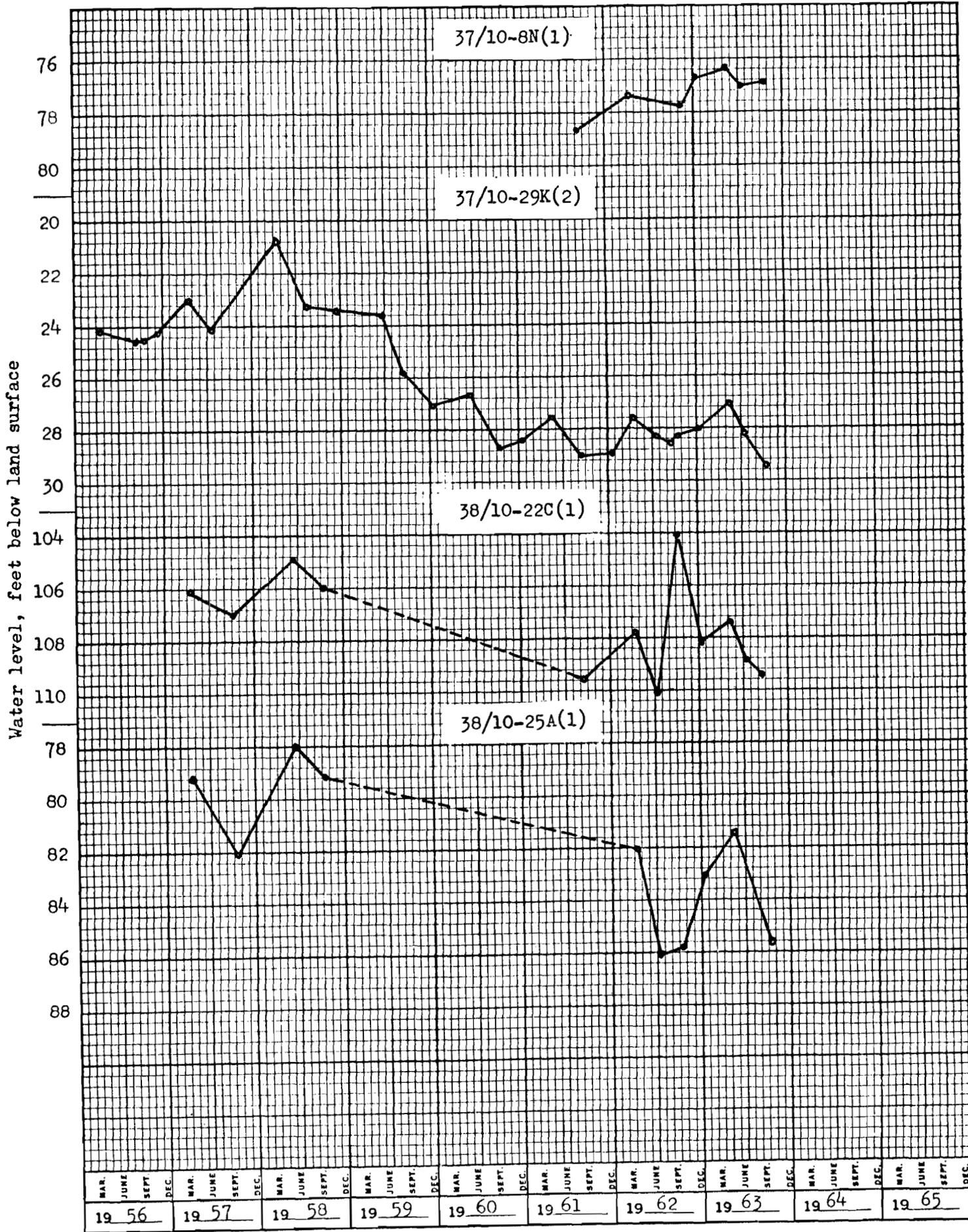
OBSERVATION WELLS

- 37/10-8N(1) (Edgewood Ranch) is a 281-foot drilled well in lava located in Swan Lake Valley.
- 37/10-29K(2) (Edgewood Ranch) is a 800-foot drilled well in gravel located in Swan Lake Valley. Periodic water level measurements available from 1949 to date.
- 38/10-22C(1) (Mike Short) is a 460-foot drilled well in lava located in Swan Lake Valley.
- 38/10-25A(1) (Garrison & Mitchell) is a 524-foot drilled well in lava boulders and cinders located in Swan Lake Valley.

REFERENCES

- Meyers, Joseph D. and Newcomb, R. C., 1952, Geology and ground-water resources of the Swan Lake-Yonna Valleys area, Klamath County, Oregon: U. S. Geological Survey open-file report.
- Newcomb, R. C. & Hart, D. H., 1958, Preliminary report on the ground-water resources of the Klamath River Basin, Oregon: U. S. Geological Survey. open-file report.

SWAN LAKE VALLEY (14)



MEDFORD AREA (15)

The Medford area like other parts of Southwestern Oregon is noted for its lack of permeable ground-water resources. Most wells produce adequate domestic or small group domestic supplies, however, large yields for irrigation or industrial purposes are generally not obtainable.

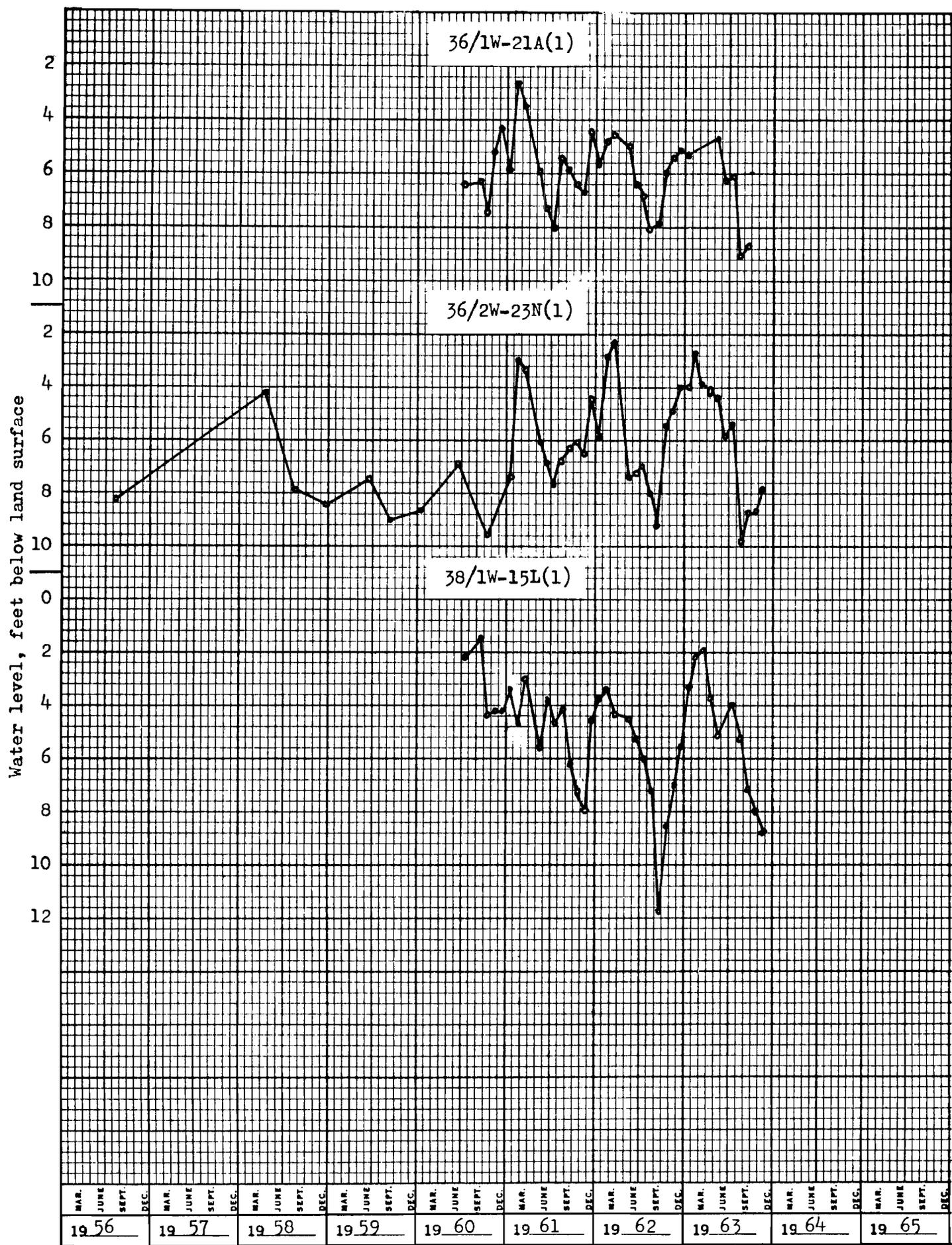
OBSERVATION WELLS

36/1W-21A(1) (Bud Hoover) is a 95-foot drilled well in shale located near White City.

36/2W-23N(1) (U.S.G.S.) is a 110-foot drilled well in sand and gravel located about 3 miles west of White City.

38/1W-15L(1) (City of Phoenix) is a 700-foot drilled well in sedimentary rock located in Phoenix.

MEDFORD AREA (15)



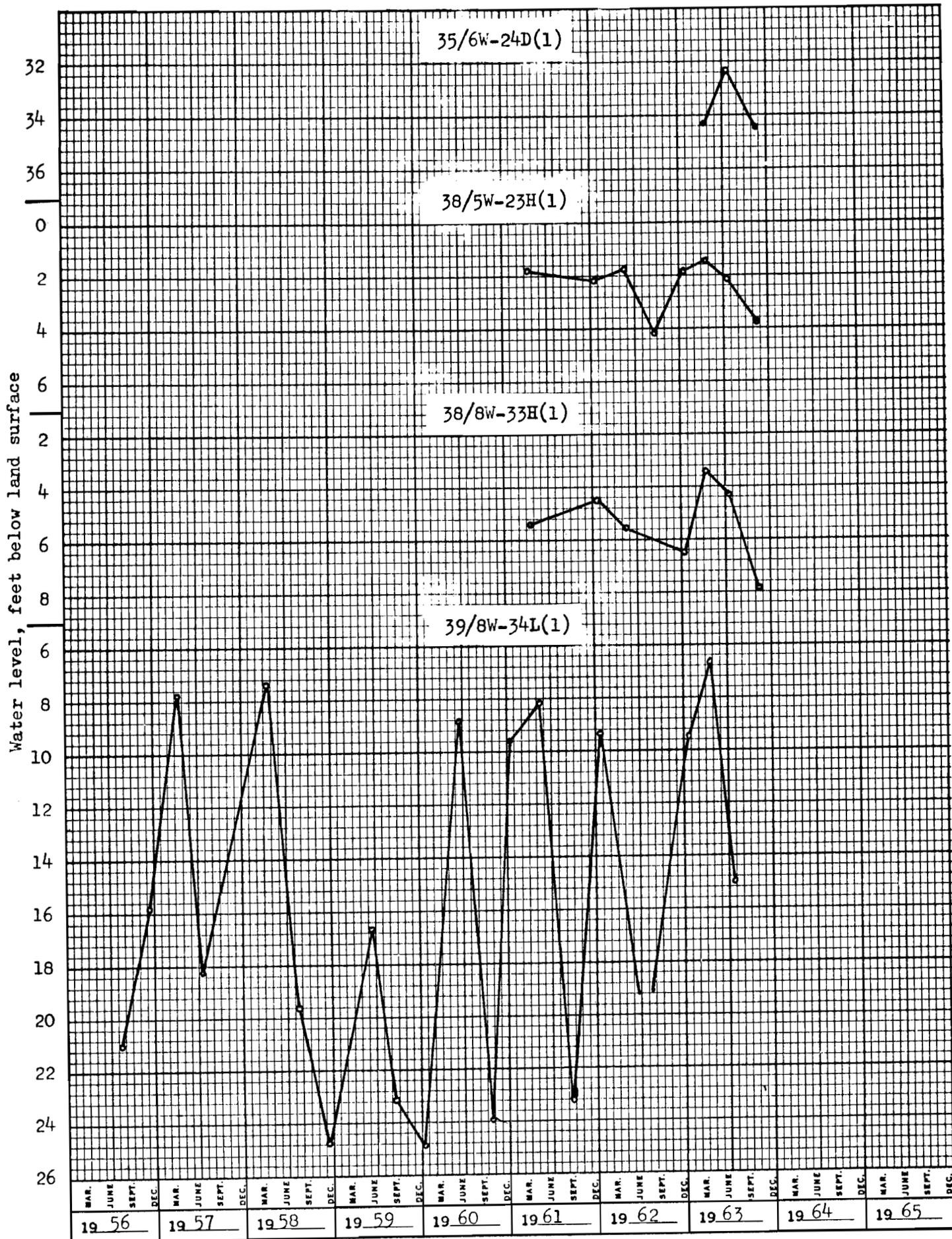
GRANTS PASS AREA (16)

The Grants Pass area like other parts of Southwestern Oregon is noted for the lack of permeable ground-water reservoirs. Most wells produce adequate domestic supplies or small group domestic supplies, however, large yields for irrigation or industrial purposes are generally not obtainable.

OBSERVATION WELLS

- 35/6W-24D(1) (Oregon State Highway) is a 123-foot drilled well in granite rock located about 5 miles northwest of Grants Pass.
- 38/5W-23H(1) (J. Katzenbach) is a 62-foot drilled well located about 2 miles southwest of Provolt.
- 38/8W-33H(1) (Mr. Smith) is a 29-foot drilled well in sand and gravel located about 2 miles north of Kerby.
- 39/8W-34L(1) (U.S.G.S.) is a 119-foot drilled well in sand and gravel located about 3 miles southeast of Cave Junction. Periodic water level measurements available from 1952 to date.

GRANTS PASS AREA (16)



COOS BAY AREA (17)

The sand dune area lying along the coast north of Coos Bay contains the most productive ground-water reservoirs in the entire coastal area. The dune sands which exceed several hundred feet in thickness, absorb large amounts of the relatively heavy precipitation. It is estimated that the sand dunes in this area are capable of sustaining a yield of over 2,000,000 gallons per day per square mile.

To date only a small part of the ground-water supply in this area has been developed and put to use.

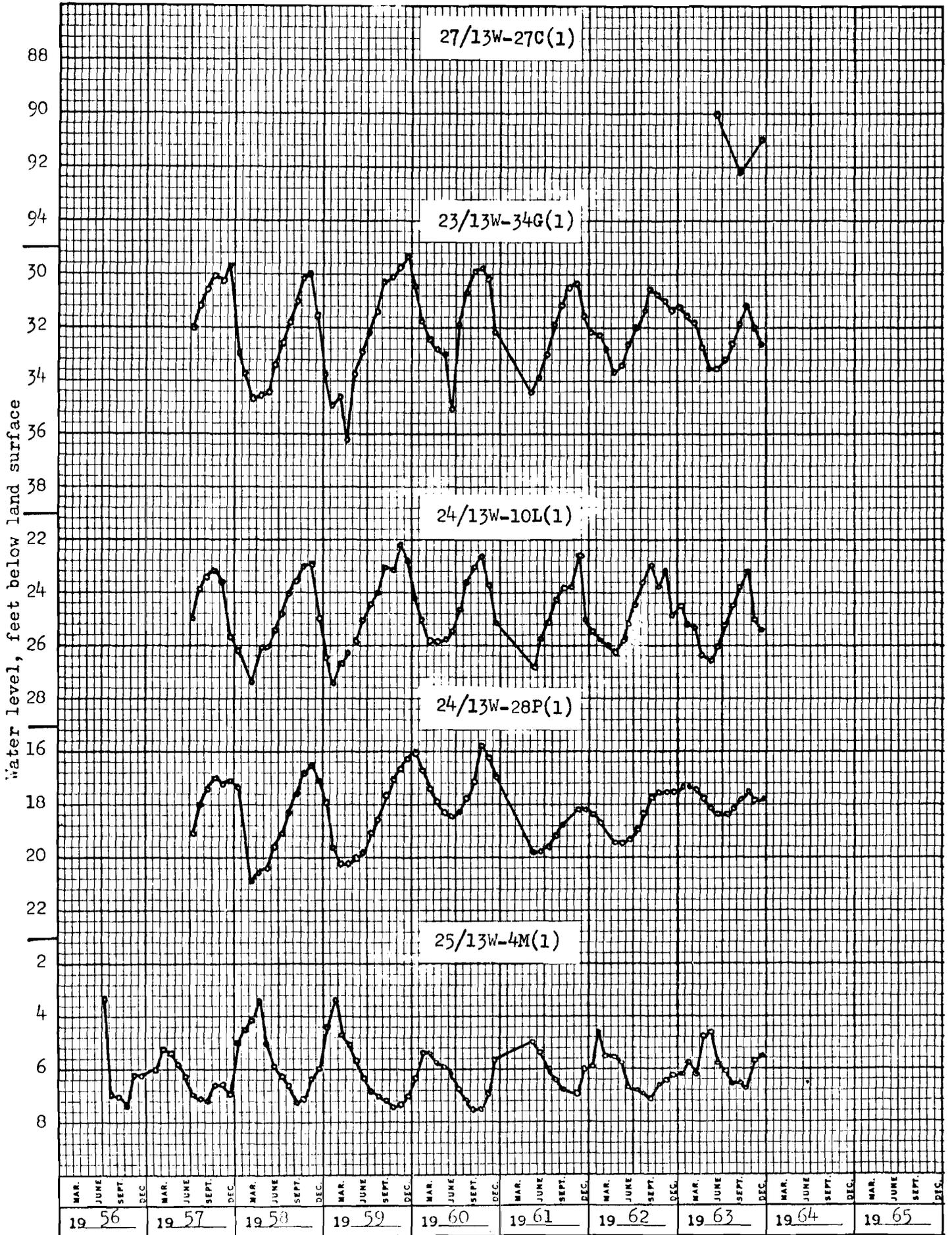
OBSERVATION WELLS

- 27/13W-27C(1) (City of Coquille) is a 150-foot drilled well in sandstone located about 3 miles northwest of Coquille.
- 23/13W-34G(1) (Pacific Power & Light Co.) is a 137-foot drilled well in sand located about 9 miles north of North Bend.
- 24/13W-10L(1) (Pacific Power & Light Co.) is a 505-foot drilled well in sand located about 6 miles north of North Bend. Water level information relates to sand formation encountered in first 120 feet.
- 24/13W-28P(1) (Pacific Power & Light Co.) is a 179-foot drilled well in sand located about 5 miles northwest of North Bend.
- 25/13W-4M(1) (Pacific Power & Light Co.) is a 18.5-foot jetted well in sand located about 1 mile north of North Bend.

REFERENCES

- Brown, S. G. & Newcomb, R. C., 1963, Ground-water resources of the coastal sand dune area north of Coos Bay, Oregon: U. S. Geological Survey Water Supply Paper 1619-D.

COOS BAY AREA (17)



CHEMULT-LAPINE-SISTERS AREA (18)

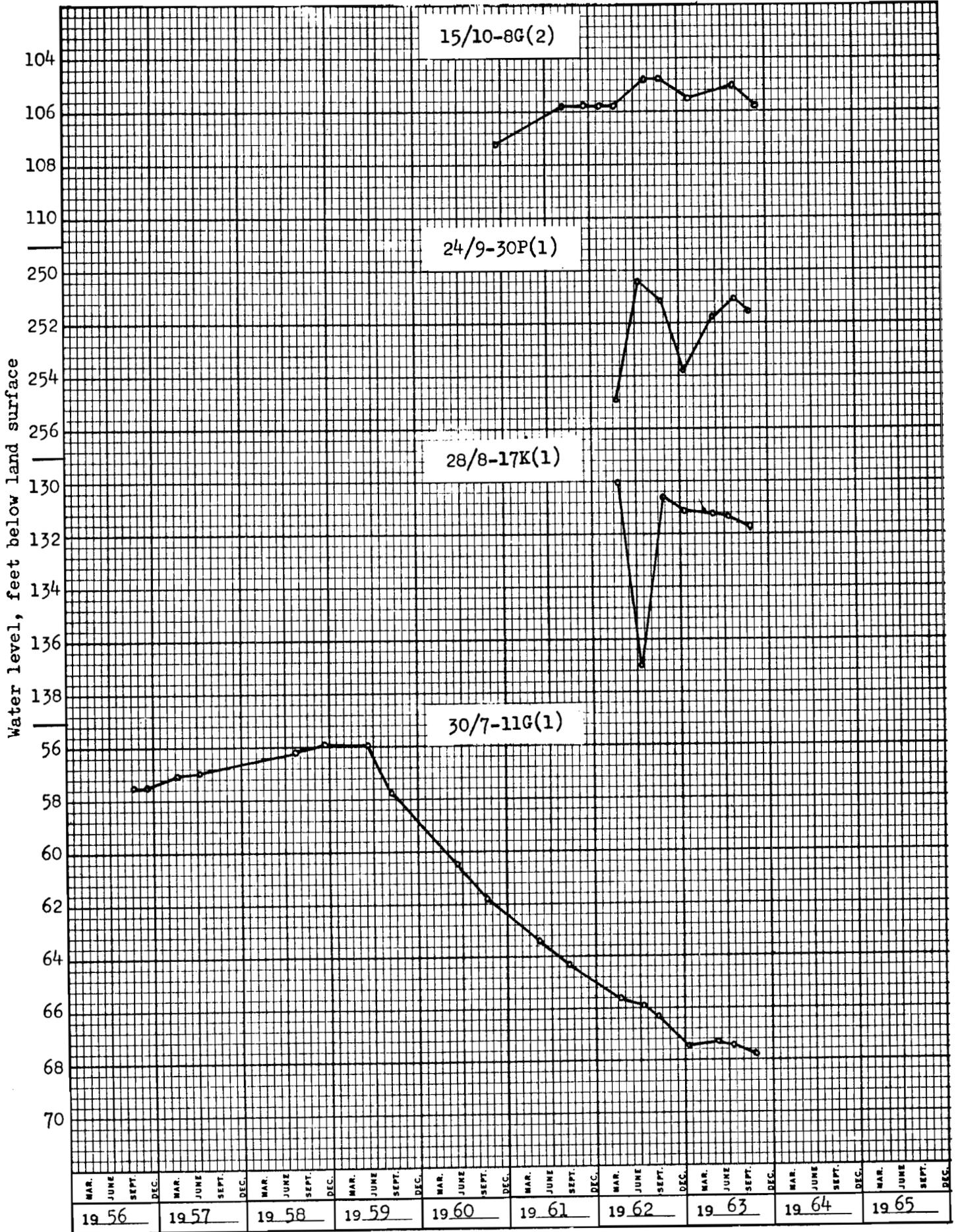
The eastern slope of the Cascade Mountains contain many ground-water reservoirs. The most permeable of these are generally associated with the younger volcanic rocks and associated cinder deposits. To date, very little ground water has been developed in this area except for domestic use and stock water.

The cause of the unusual decline observed in Well No. 30/7-11G(1) located near Klamath Marsh is not known.

OBSERVATION WELLS

- 15/10-8G(2) (Ross Hammond) is a 228-foot drilled well in volcanic rock located near Sisters.
- 24/9-30P(1) (Crescent Ranger Station) is a 267-foot drilled well in basalt located in Crescent.
- 28/8-17K(1) (Winema Lumber Co.) is a 361-foot drilled well in lava located about 7 miles south of Chemult.
- 30/7-11G(1) (Crown Zellerbach Corp.) is a 123-foot drilled well located near Klamath Marsh.

CHEMULT-LAPINE-SISTERS AREA (18)



PRINEVILLE AREA (19)

The Prineville area includes the Crooked River Valley in and around the City of Prineville. Ground water in this area occurs in the shallow fine-grained alluvial deposits and in a sand and gravel stratum that occurs at the base of the alluvial deposits. Ground water in this sand and gravel stratum is confined and many wells developing water from this zone flow at land surface.

In the past there was a marked decline in the artesian pressure and water levels in the Prineville area. Water levels appear to have stabilized in recent years.

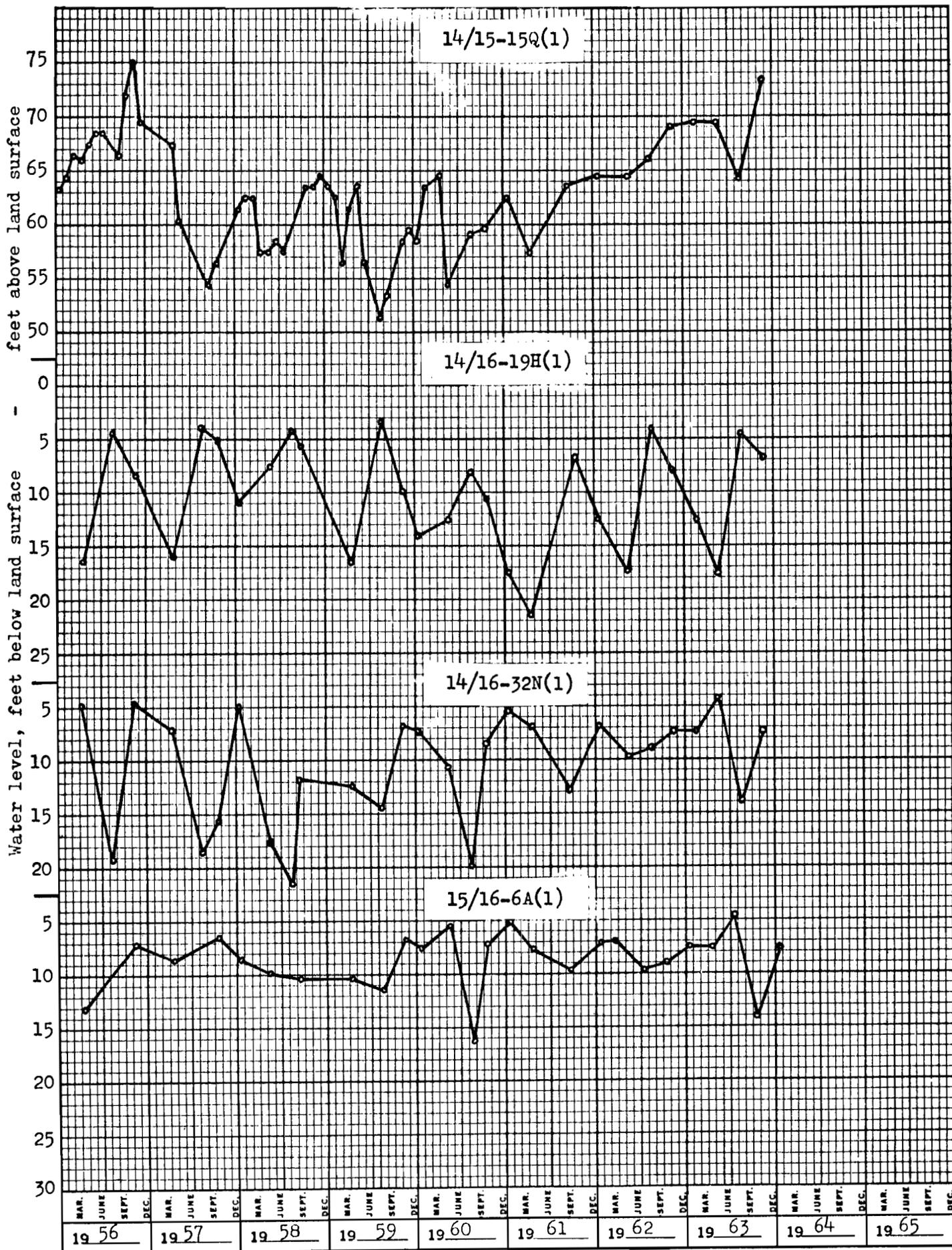
OBSERVATION WELLS

- 14/15-15Q(1) (M. D. Colahan) is a 210-foot drilled artesian well in sand and gravel located about 4 miles northwest of Prineville. Periodic water level measurements available from 1945 to date.
- 14/16-19H(1) (Leslie Clauson) is a 47-foot drilled well in sand located about 2 miles northwest of Prineville. Periodic water level measurements available from 1944 and 1947 to date.
- 14/16-32N(1) (E. E. Wagoner) is a 160-foot drilled well in sand and gravel located in Prineville. Periodic water level measurements available from 1944 to date.
- 15/16-6A(1) (M. E. Gerow, et.al.) is a 240-foot drilled well in sand and gravel located in Prineville. Periodic water level measurements available from 1944 to date.

REFERENCES

- Robinson, J. W., and Price, Don, 1963, Ground water in the Prineville Area, Crook County, Oregon. U. S. Geol. Survey Water Supply Paper 1619-P.

PRINEVILLE AREA (19)



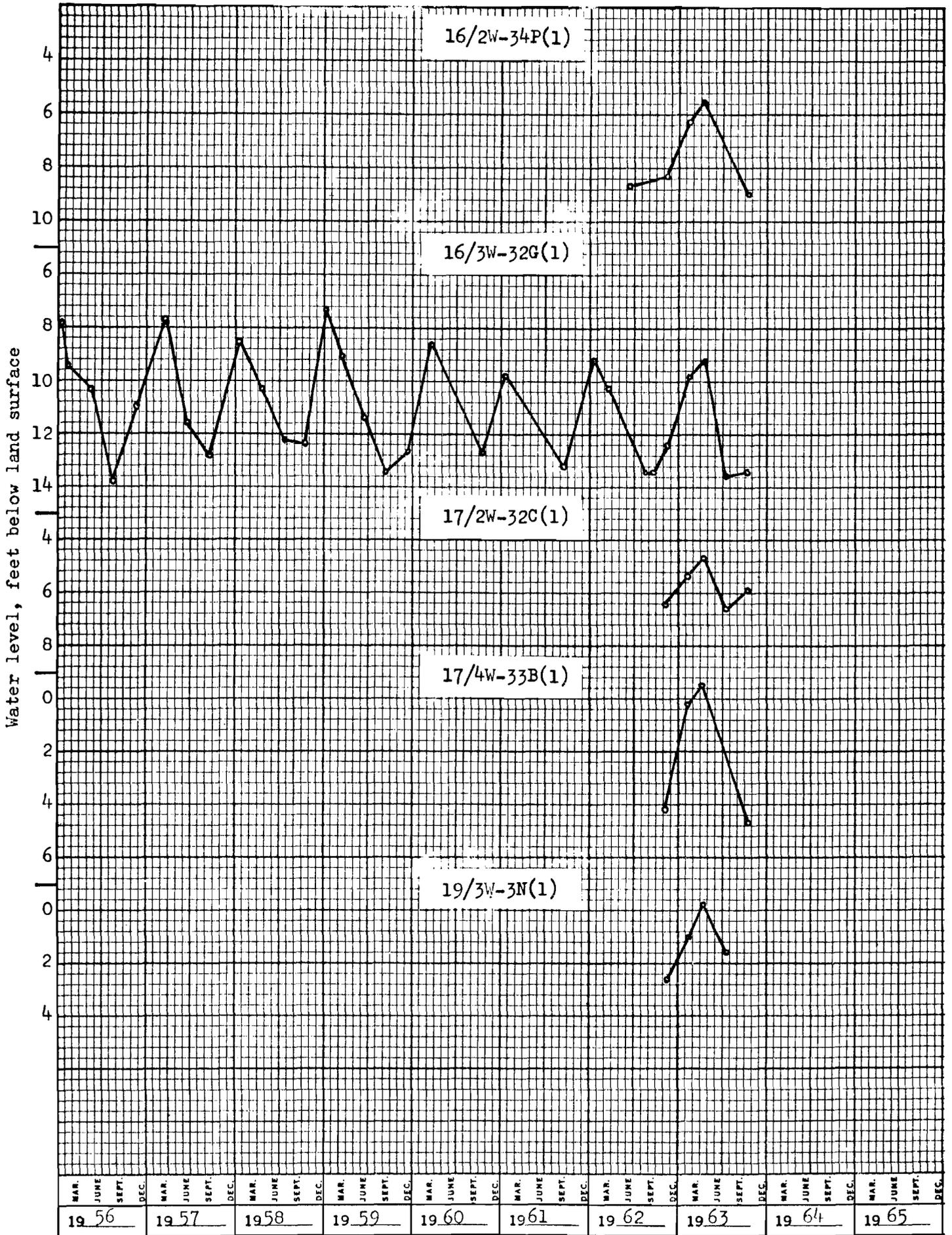
WILLAMETTE BASIN - LANE COUNTY (20)

- 16/2W-34P(1) (M. A. Nadeau) is a 73-foot drilled well in sand and gravel located about 1 mile south of Mohawk.
- 16/3W-32G(1) (Leo Sidwell) is a 18-foot dug well in sand and gravel located near Coburg. Periodic water level measurements available from 1928-30, 1935-36 and 1938 to date.
- 17/2W-32C(1) (Weyerhaeuser Timber Co.) is a 175-foot drilled well in sand and gravel located near Springfield.
- 17/4W-33B(1) (Westlawn Memorial Cemetery) is a 150-foot drilled well in sand and gravel located about 3 miles west of Eugene.
- 19/3W-3N(1) (Oregon State Game Commission) is a 200-foot drilled well in sandstone located about 4 miles northwest of Creswell.

REFERENCES

- Piper, Arthur, 1942, Ground-water resources of the Willamette Valley, Oregon.
U. S. Geological Survey Water Supply Paper 890.

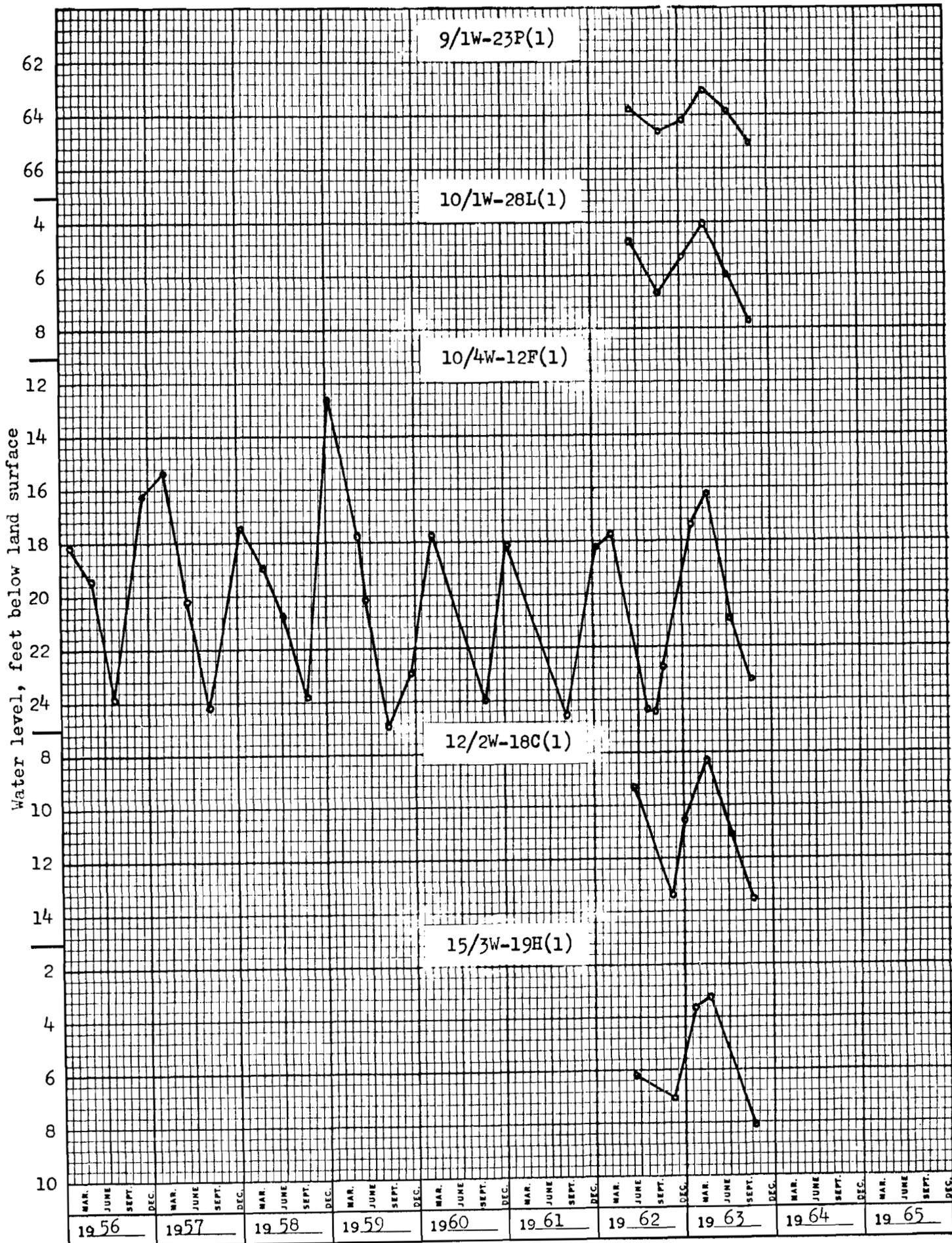
WILLAMETTE BASIN (20) - LANE COUNTY



WILLAMETTE BASIN - LINN COUNTY (20)

- 9/1W-23P(1) (Charles Hecht) is a 93-foot drilled well in rock located about 2 miles southeast of Stayton.
- 10/1W-28L(1) (Grant Farris) is a 172-foot drilled well in blue shale located about 3 miles southeast of Scio.
- 10/4W-12F(1) (Henry Hoefler) is a 25-foot dug well in gravel located about 7 miles north of Albany. Periodic water level measurements available from 1928-30, 1935-36 and 1938 to date.
- 12/2W-18C(1) (Henry DeManette) is a 175-foot drilled well in rock located about 4 miles west of Lebanon.
- 15/3W-19H(1) (Edgar Grimes) is a 98-foot drilled well in sand and gravel located about 4 miles southeast of Harrisburg.

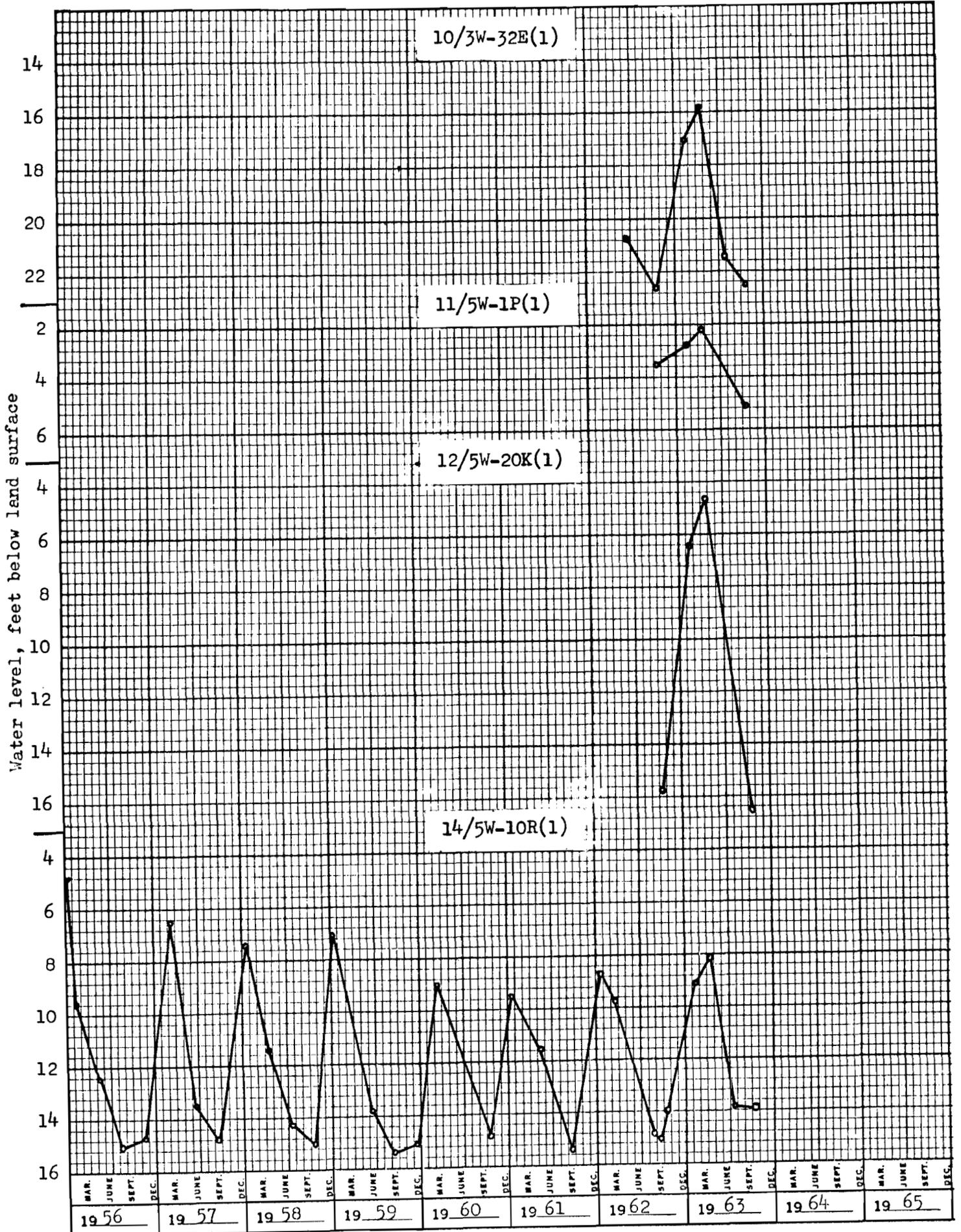
WILLAMETTE BASIN (20) - LINN COUNTY



WILLAMETTE BASIN - BENTON COUNTY (20)

- 10/3W-32E(1) (D. E. Nebergall) is a 90-foot drilled well in sand located about 1 mile northeast of Albany.
- 11/5W-1P(1) (Karl Bruinsma) is a 89-foot drilled well in sand rock located about 4 miles northeast of Corvallis.
- 12/5W-20K(1) (C. A. McDonald) is a 100-foot drilled well in sand and gravel located about 3 miles southwest of Corvallis.
- 14/5W-10R(1) (Chris Lindseth) is a 19-foot driven well in silt located about 4 miles north of Monroe. Periodic water level measurements available from 1929-30, 1935-36 and 1938 to date.

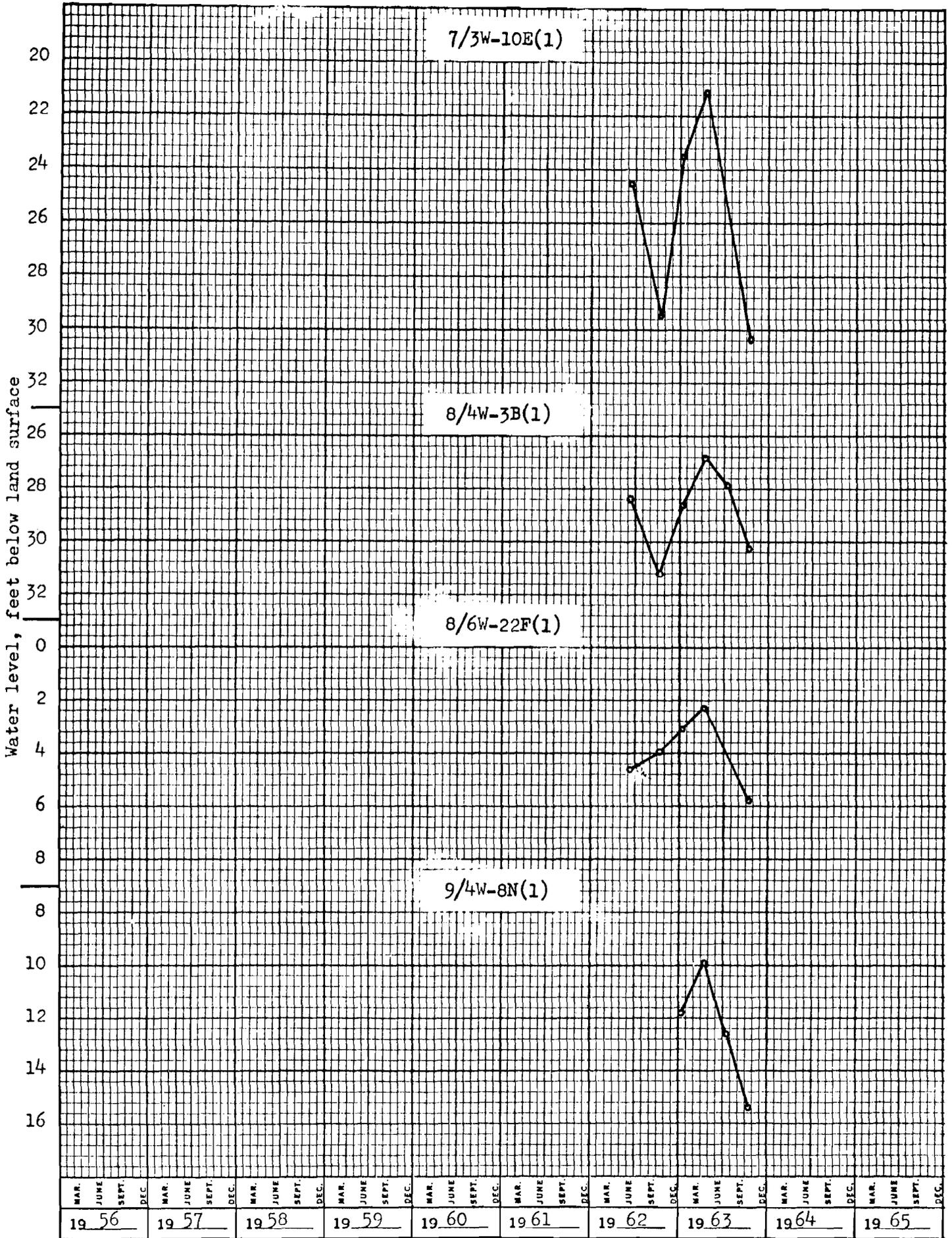
WILLAMETTE BASIN (20) - BENTON COUNTY



WILLAMETTE BASIN - POLK COUNTY (20)

- 7/3W-10E(1) (Leland Brandt) is a 150-foot drilled well in sand and gravel about 3 miles north of Salem.
- 8/4W-3B(1) (Theodore Muller) is a 60-foot drilled well in gravel located about 4 miles southeast of Rickreall.
- 8/6W-22F(1) (Edward Bakke) is a 79-foot drilled well located near Falls City.
- 9/4W-8N(1) (D. W. Christianson) is a 120-foot drilled well in sand and gravel located about 8 miles south of Independence.

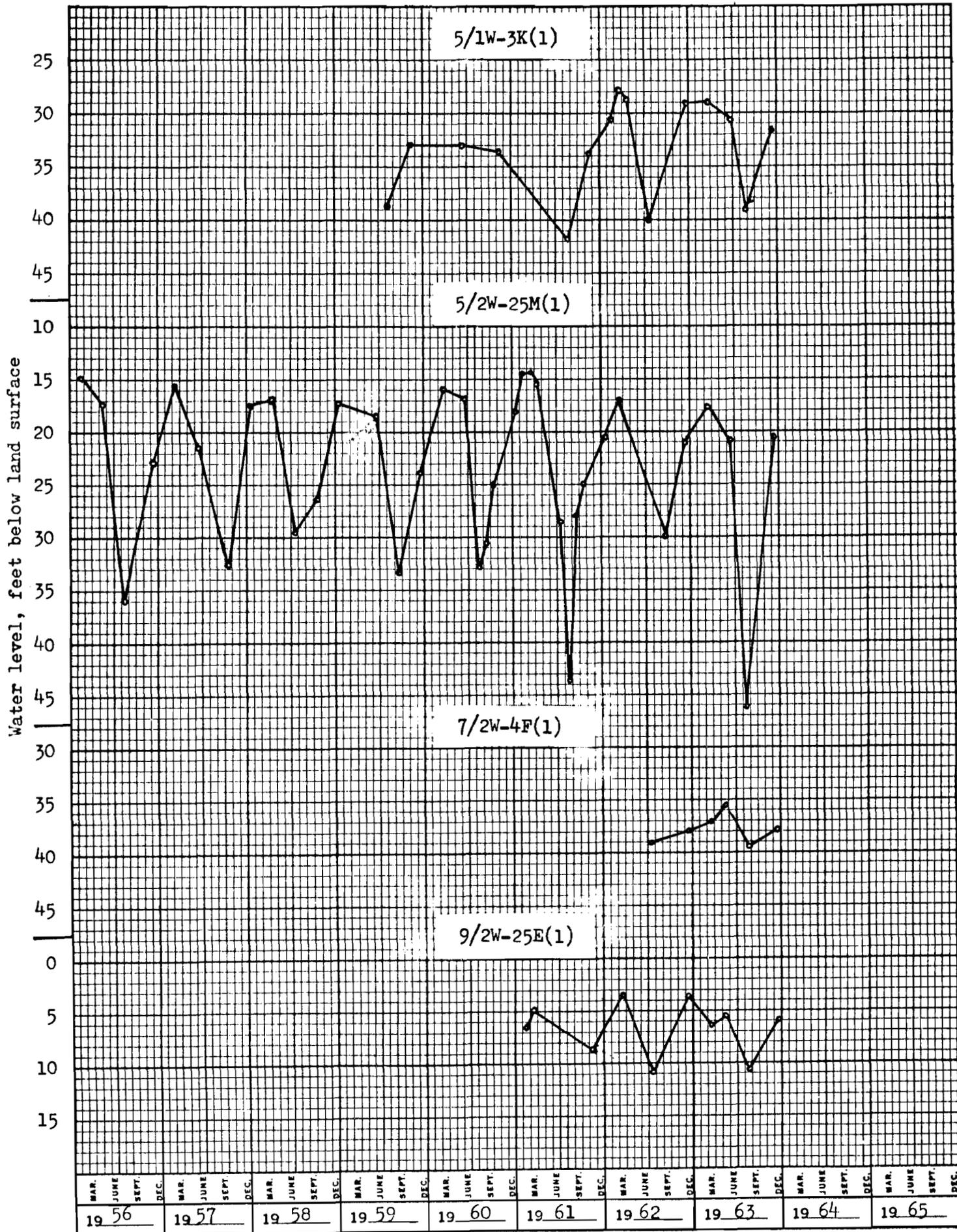
WILLAMETTE BASIN (20) - POLK COUNTY



WILLAMETTE BASIN - MARION COUNTY (20)

- 5/1W-3K(1) (Julius Ramlo) is a 102-foot drilled well in gravel located about 1 mile south of Hubbard.
- 5/2W-25M(1) (Sam Brown) is a 252-foot drilled well in sand and gravel located about 1 mile east of Gervais. Periodic water level measurements available from 1929-30, 1935-36 and 1938 to date.
- 7/2W-4F(1) (P. W. Woelke) is a 165-foot drilled well in sand and gravel located about 4 miles northeast of Salem.
- 9/2W-25E(1) (Louis Scofield) is a 25-foot drilled well in gravel located about 3 miles south of West Stayton.

WILLAMETTE BASIN (20) - MARION COUNTY



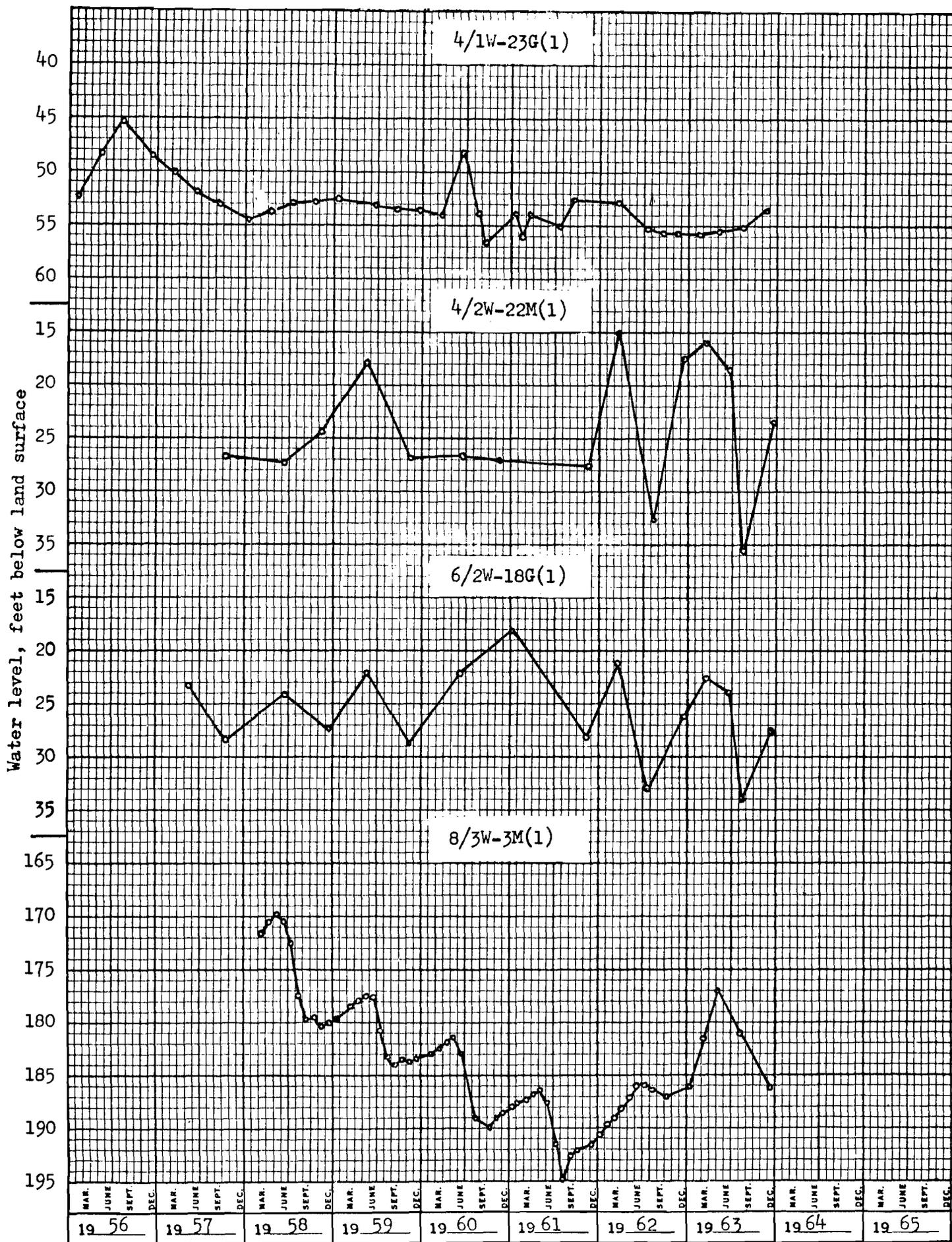
WILLAMETTE BASIN - MARION COUNTY (20)

- 4/1W-23G(1) (Julius Sather) is a 57-foot dug well in silt and sand located about 3 miles southwest of Aurora. Periodic water level measurements available from 1945 to date.
- 4/2W-22M(1) (Kirk Bros.) is a 117-foot drilled well in sand located about 3 miles east of St. Paul.
- 6/2W-18G(1) (E. A. Hillyer) is a 140-foot drilled well in sand and gravel located about 2 miles southwest of Brooks.
- 8/3W-3M(1) (Salem Heights Water District-Madronna Well) is a 350-foot drilled well in basalt located near Salem. Ground-water withdrawal from this reservoir greatly reduced in August 1961 because of completion of pipeline to the Salem municipal water system.

REFERENCES

- Price, Don, 1961, Records of wells, water levels and chemical quality of ground water in the French Prairie-Mission Bottom Area, Northern Willamette Valley, Oregon. State Engineer Ground Water Report No. 1.

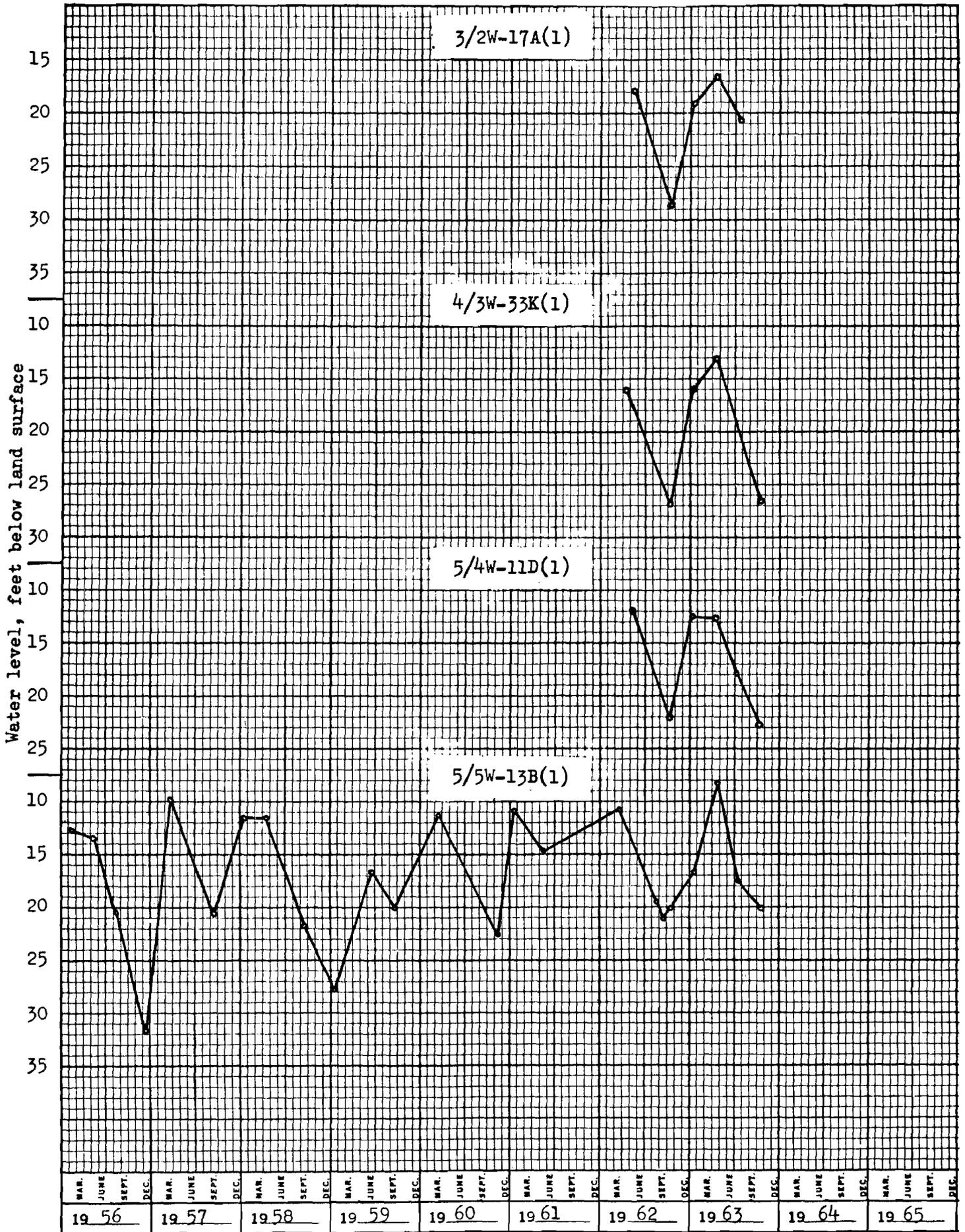
WILLAMETTE BASIN (20) - MARION COUNTY



WILLAMETTE BASIN - YAMHILL COUNTY (20)

- 3/2W-17A(1) (Mack Bennett) is a 200.5-foot drilled well in basalt located about 1 mile northeast of Newberg.
- 4/3W-33K(1) (Clayton Trent) is a 220-foot drilled well in sand located about 4 miles south of Dayton.
- 5/4W-11D(1) (Norman Longhurst) is a 96-foot drilled well in black sand located about 3 miles east of Whiteson.
- 5/5W-13B(1) (George Fuller) is a 64-foot drilled well in sand and gravel located about 7 miles southwest of McMinnville. Periodic water level measurements available from 1928-30, 1935-36 and 1938 to date.

WILLAMETTE BASIN (20) - YAMHILL COUNTY



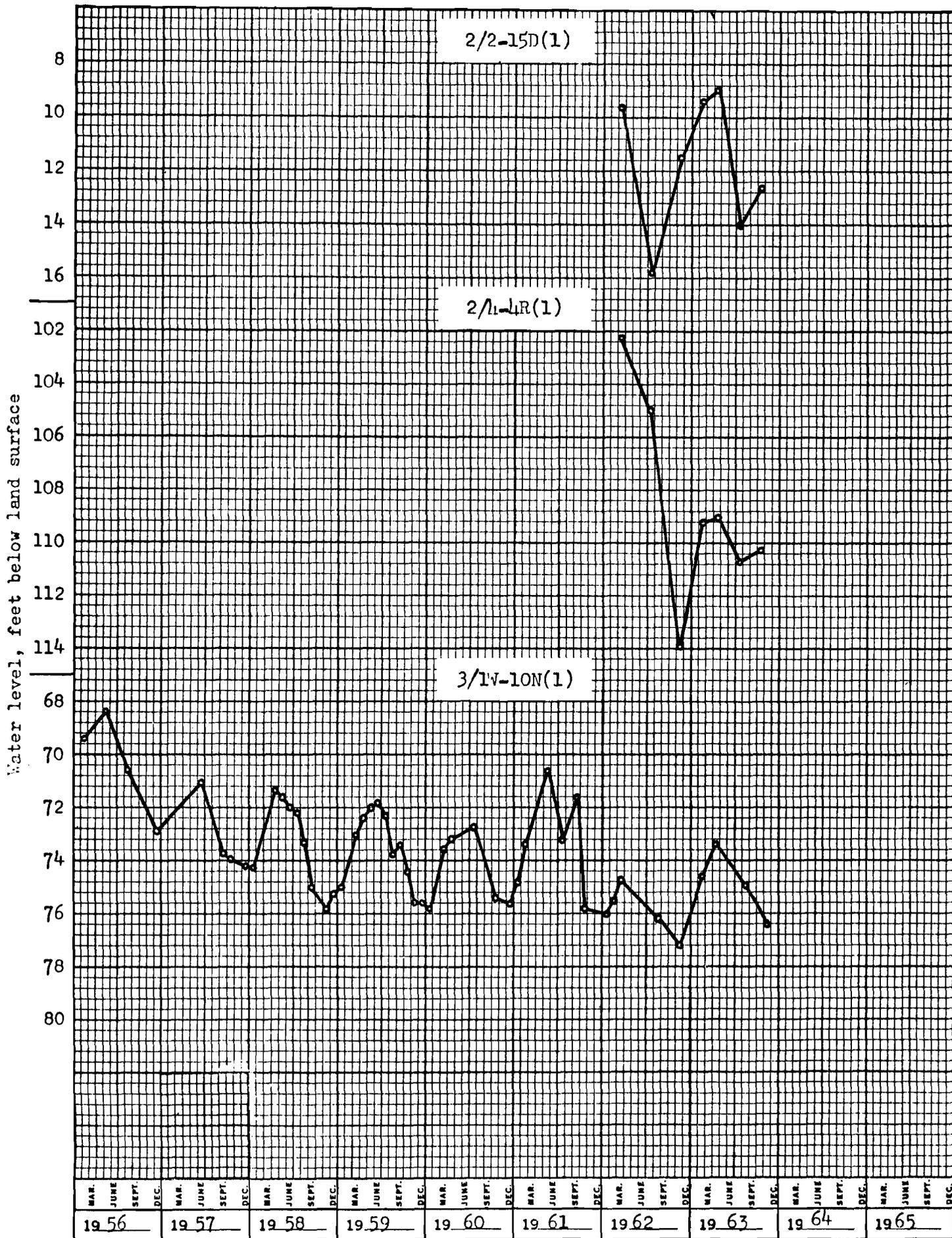
WILLAMETTE BASIN - CLACKAMAS COUNTY (20)

- 2/2-15D(1) (Byrum Morehouse) is a 347-foot drilled well in sand and gravel located near Gladstone.
- 2/4-4R(1) (M. K. Smith) is a 400-foot drilled well in sand and gravel located about 2 miles east of Boring.
- 3/1W-10N(1)(Charles Jenkins) is a 115-foot drilled well in Columbia River Basalt located about 2 miles north of Wilsonville. Periodic water level measurements available from 1951 to date.

REFERENCES

Hampton, E. R., 1963, Records of wells, water levels and chemical quality of ground water in the Molalla-Salem Slope area, Northern Willamette Valley, Oregon. State Engineer Ground Water Report No. 2.

WILLAMETTE BASIN (20) - CLACKAMAS COUNTY



TILLAMOOK AREA (21)

- 1/9W-18M(1) (Green Acres Motel) is a 187-foot drilled well located about 2 miles north of Tillamook.
- 1/9W-27E(1) (Virgil Chadwick) is a 197-foot drilled well in gravel located about 2½ miles east of Tillamook.
- 1/10W-12D(1) (Leo & Robert Wassmer) is a 80-foot drilled well located near Idaville.
- 2/9W-21E(1) (Vern Darby) is a 128-foot drilled well in gravel located about 7 miles southeast of Tillamook.

TILLAMOOK AREA (21)

