

BEFORE THE STATE ENGINEER OF OREGON

WASCO COUNTY

ON THE QUESTION OF
DETERMINATION OF A
CRITICAL GROUND WATER
AREA IN THE DALLES AREA,
OREGON -----

FINDINGS, CONCLUSIONS

AND ORDER

INTRODUCTION

- 1 -

Affidavits attesting to a decline of the water table in
The Dalles Area were received by the State Engineer on January 22,
1959. These affidavits were submitted by:

Paul Weigelt, Chairman of the Board of Trustee,
Columbia Lodge No. 5, I.O.O.F.

Clifford Henderson, Secretary, Cherry Hill Improvement
Company.

Don W. Bailey, Secretary, Mill Creek Irrigation Cooperative.
Secretary, Columbia Fruit Growers Cooperative.

Edward J. Geiger, Member, Three-Mile Irrigation Cooperative.

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Written notices of a hearing on the question of determination
of a Critical Ground Water Area in The Dalles Area, Wasco County, Oregon
were given on January 30, 1959 to the licensed Water Well Drillers whose
addresses are within Wasco County. Notices were also given to all the
claimants or appropriators of ground water in The Dalles Area that were
of record and to the Mayor of the City of The Dalles. Notices were also
published in a newspaper of general circulation in Wasco County. The
notice set forth the date of the hearing and invited all interested
persons to be present to give oral or documentary evidence on the
following subjects:

(a) Whether ground water levels in the area in question
are declining or have declined excessively;

(b) Whether the wells of two or more ground water claimants or appropriators within the area in question interfere substantially with one another;

(c) Whether the available ground water supply in the area in question is being or is about to be overdrawn;

(d) Whether the purity of the ground water supply in the area in question has been or reasonably may be expected to become polluted to an extent contrary to the public welfare, health and safety.

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A hearing on the above entitled subjects was held by the State Engineer at the Wasco County Court House, The Dalles, Oregon on March 27, 1959. Appearances were made by Mr. T. Leland Brown, Attorney for The Dalles Improvement District; Mr. Donald E. Heisler, Attorney for the Chenoweth Irrigation Cooperative; and Mr. John Nichols, Assistant Attorney General representing the State Engineer. The following appeared as witnesses at this hearing.

Jack Sceva - Ground Water Geologist, Oregon State Engineer

R. C. Newcomb - District Geologist, Ground Water Branch,
U. S. Geological Survey

Jack Foster - Well owner and operator

Roger Wilhelm - Water Master and County Surveyor

Adolph Agidius - Well owner and operator

V. R. (Jack) Martin - Well owner and operator

Edward J. Seufert, Jr. - Well owner and operator

Paul Weigelt - Trustee, of I.O.O.F. & well owner

Robert B. Laursen - City Manager, The Dalles

W. H. Myers - Member, Cherry Heights Irrigation Cooperative

Dewey Wagonblast, Jr. - Well owner and operator

Ernest H. Rhodes - Manager, Chenoweth Irrigation Coop.

George M. Davis - Well owner and operator

Don Bailey - Well owner and operator

George Stadelman - Well owner

Leland Gunderson, Mechanical Engineer, Harvey
Aluminum Company.

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It now appearing that all evidence and testimony have been taken in the above entitled matter, and the State Engineer being fully advised in the premises, makes and orders to be entered in the records of his office the following Findings, Conclusions and Order.

FINDINGS

- 1 -

The Dalles Area, as used in these findings, includes the area in and about the City of The Dalles, the areas adjacent to the lower reaches of Threemile Creek, Mill Creek, Chenoweth Creek, and the area bordering the South Shore of the Columbia River from Rocky Island on the west to the mouth of Fifteenmile Creek on the east. It includes parts of Township 2 North, Range 13 East, and Township 1 North, Ranges 13 and 14 East, Willamette Meridian, Wasco County, Oregon.

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Two geologic formations crop out in The Dalles area. The oldest of these is a thick series of basaltic lava flows known as the Columbia River basalt formation. This formation may exceed 2000 feet in thickness in The Dalles Area. The Columbia River basalt formation is overlain by a series of semi-consolidated sandstone, sandy shale, conglomerate, tuff and mud flow deposits that have been named the Dalles formation. The Dalles formation may exceed 1000 feet in thickness in some parts of The Dalles Area.

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An exceptionally permeable zone in the Columbia River basalt formation that generally ranges from 20 to 40 feet in thickness occurs between 350 and 400 feet below the top of the formation. This zone, which is composed of highly fractured and broken basalt has been developed by many wells in The Dalles Area. This zone which will be known herein as "The Dalles Ground Water Reservoir" is locally known as the "Dalles Pool". In the downtown area of The Dalles and on the lava plain west of town, a part of the Columbia River basalt formation has been removed by erosion so that the depth to the top of The Dalles Ground Water Reservoir is at places somewhat less than its stratigraphic position below the top of the formation. For example, the City Hall well at The Dalles encountered The Dalles Ground Water Reservoir at a depth of about 200 feet below land surface.

The Columbia River basalt and the Dalles formations have been folded and faulted. The structure of these rock units plays an important role in the occurrence of ground water in The Dalles Area. Fault zones which break the continuity of water bearing strata can form effective ground water barriers. At places such barriers form boundaries to The Dalles Ground Water Reservoir. For example, the R. Renken well, located in Section 22, Township 1 North, Range 13 East, Willamette Meridian in the Threemile Creek Valley, obtains water from The Dalles Ground Water Reservoir, and has a static water level some 530 feet below land surface. A short distance upstream, ground water occurs under artesian conditions and the wells flow at the surface. The subsurface barrier that exists between these wells would serve as a boundary to The Dalles Ground Water Reservoir. A similar boundary occurs in the Mill Creek Valley, where a barrier exists between the Mill Creek Irrigation Cooperative well located in Section 8, Township 1

North, Range 13 East, Willametter Meridian and the artesian well located at The Pines in Section 18, Township 1 North, Range 13 East, Willamette Meridian. Faults in Section 1, Township 1 North, Range 13 East, Willamette Meridian, and in Section 29, Township 2 North, Range 13 East. Willamette Meridian, also form boundaries to The Dalles Ground Water Reservoir.

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Ground water in The Dalles Ground Water Reservoir is recharged by subsurface leakage from surrounding and overlying ground water reservoirs, which in turn are recharged from precipitation, or leakage from other reservoirs. Water level measurements in the City Hall well at The Dalles, which are published in Geological Survey Water Supply Paper 659-B (1932) "Geology and Ground Water Resources of The Dalles Region" show that the water level in wells that develop water from The Dalles Ground Water Reservoir have marked fluctuations with changes in atmospheric pressure, but show no fluctuation that could be correlated with changes in stage of the Columbia River.

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The following table (Table 1) is a list of the Water Right Certificates, permits, and applications for permits to appropriate ground water from The Dalles Ground Water Reservoir in order of priority. Some of the wells listed are no longer in operation, and some of the wells for which permits are pending have been constructed and put into operation without a permit. This table also shows the maximum rate and amount of ground water that could be appropriated under these filings (assuming the pending applications were approved and the water rights perfected) so long as the water was being put to the beneficial use set forth in the filings. The actual amount of ground water now being appropriated in any month or year is unknown. Information on the actual withdrawals of ground water are necessary to obtain estimates of the available supply.

GROUND WATER RIGHT CERTIFICATES, PERMITS, AND APPLICATIONS

TO APPROPRIATE GROUND WATER FROM THE DALLES

Table 1

GROUND WATER RESERVOIR (DALLES POOL) IN ORDER OF PRIORITY

Priority Date	Application No.	Permit No.	Certificate No.	Owner 1/	Location TWP RGE SEC.			Limitation 2/	Maximum allowable appropriation acre feet for year 3/	Cumulative total Acre Feet Per Year
7-15-30	U-34	U-29	11283	A.S.McDonald	2N	13E	32	31½ gpm for the irrigation of 5 acres	15	15
1-31-31	U-50	U-43	9104	G.N.McDonald	2N	13E	32	27 gpm for the irrigation of 4.5 acres	13.5	28.5
5-13-31	U-56	U-51	9303	L.E.Laphan	2N	13E	32	36 gpm for the irrigation of 4.4 acres	13.2	41.7
5-13-31	U-57	U-52	11134	J.Kasberger	2N	13E	32	18 gpm for the irrigation of 2.5 acres	7.5	49.2
8-6-31	U-64	U-56	10716	P.J.Stadelman	1N	13E	4	449 gpm for the irrigation of 80 acres	240	289.2
10-31-31	U-73	U-64	9758	G.Holtenhoff	2N	13E	32	31½ gpm for the irrigation of 10.7 acres	32.1	321.3
8-19-36	U-106	U-100	12069	H. Birrel	2N	13E	32	40 gpm for the irrigation of 4.9 acres	14.7	336.0

1/ Last known owner or operator

2/ Assumed that pending permits would be granted on a basis of 1/80 cfs (5.62 gpm) per acre and water right perfected.

3/ Duty of 3 acre feet per acre except where stated otherwise in water right certificate.

Data from records of State Engineer

Table 1

Priority Date	Application No.	Permit No.	Certificate No.	Owner 1/	Location TWP RGE SEC.			Limitation 2/	Maximum allowable appropriation acre feet for year 3/	Cumulative total Acre Feet Per Year
11-1-40	U-135	U-127	15543	Dalles City	1N	13E	4	1200 gpm for municipal use	1956	2292.0
5-3-41	U-138	U-131	14353	H.L. Wade	2N	13E	32	31½ gpm for the irrigation of 5 acres	15	2307.0
10-26-44	U-163	U-155	-----	R. Renken	1N	13E	22	449 gpm for the irrigation of 60 acres	180	2487.0
8-31-45	U-190	U-329	20794	KMW Irrig. Coop.	1N	13E	14	296 gpm for the irrigation of 52.8 acres	158.4	2645.4
10-4-45	U-181	U-189	20790	Mill Creek Irrigation Co-op.	1N	13E	8	674 gpm for the irrigation of 252.4 acres	546	3191.4
11-5-45	G-2	-----	-----	R.M. Webber	1N	13E	10	300 gpm for the irrigation of 65 acres	195	3386.4
11-19-45	U-184	U-267	20791	Cherry Heights Irrigation Co-op.	1N	13E	5	718 gpm for the irrigation of 212.3 acres	400	3786.4
12-12-45	U-186	U-175	20792	Threemile Irrigation Co-op.	1N	13E	1	1392 gpm for the irrigation of 186.6 acres	559.8	4346.2
12-20-45	U-187	U-328	20793	KMW Irrig. Co-op.	1N	13E	14	303 gpm for the irrigation of 54 acres	162	4508.2

Table 1

Priority Date	Application No.	Permit No.	Certificate No.	Owner 1/	Location TWP RGE SEC.	Limitation 2/	Maximum allowable appropriation acre feet for year 3/	Cumulative total Acre Feet Per Year
12-31-45	G-4	-----	-----	G. Haug	2N 13E 32	31½ gpm for the irrigation of 4 acres	12	4520.2
6-6-46	U-203	U-184	-----	Chenoweth Irrigation Co-op.	2N 13E 32	4557 gpm for the irrigation of 609 acres	1522.5	6042.7
3-24-47	G-7	-----	-----	I.O.O.F.	1N 13E 4	146 gpm for the irrigation of 26 acres	78	6120.7
7-9-47	U-242	U-217	22840	G.M.Davis et al	1N 13E 17	561 gpm for the irrigation of 99.6 acres	299	6419.7
2-18-48	U-261	U-707	-----	V.F.Foster	1N 13E 8	1378 gpm for the irrigation of 245.6 acres	736.8	7156.5
11-21-49	U-336	U-321	20804	Threemile Irrigation Co-op.	1N 13E 1	155 gpm for the irrigation of 27.7 acres	83.1	7239.6
10-26-51	U-442	U-413	-----	F. Wetle	2N 13E 29	248 gpm for the irrigation of 44.2 acres	132.6	7372.2
10-16-53	G-23	-----	-----	Dalles City	1N 13E 4	2469 gpm for municipal use	4015	11387.2
1-21-54	G-30	G-91	-----	Columbia Fruit Growers	1N 13E 3	224 gpm for industrial use	365	11752.2

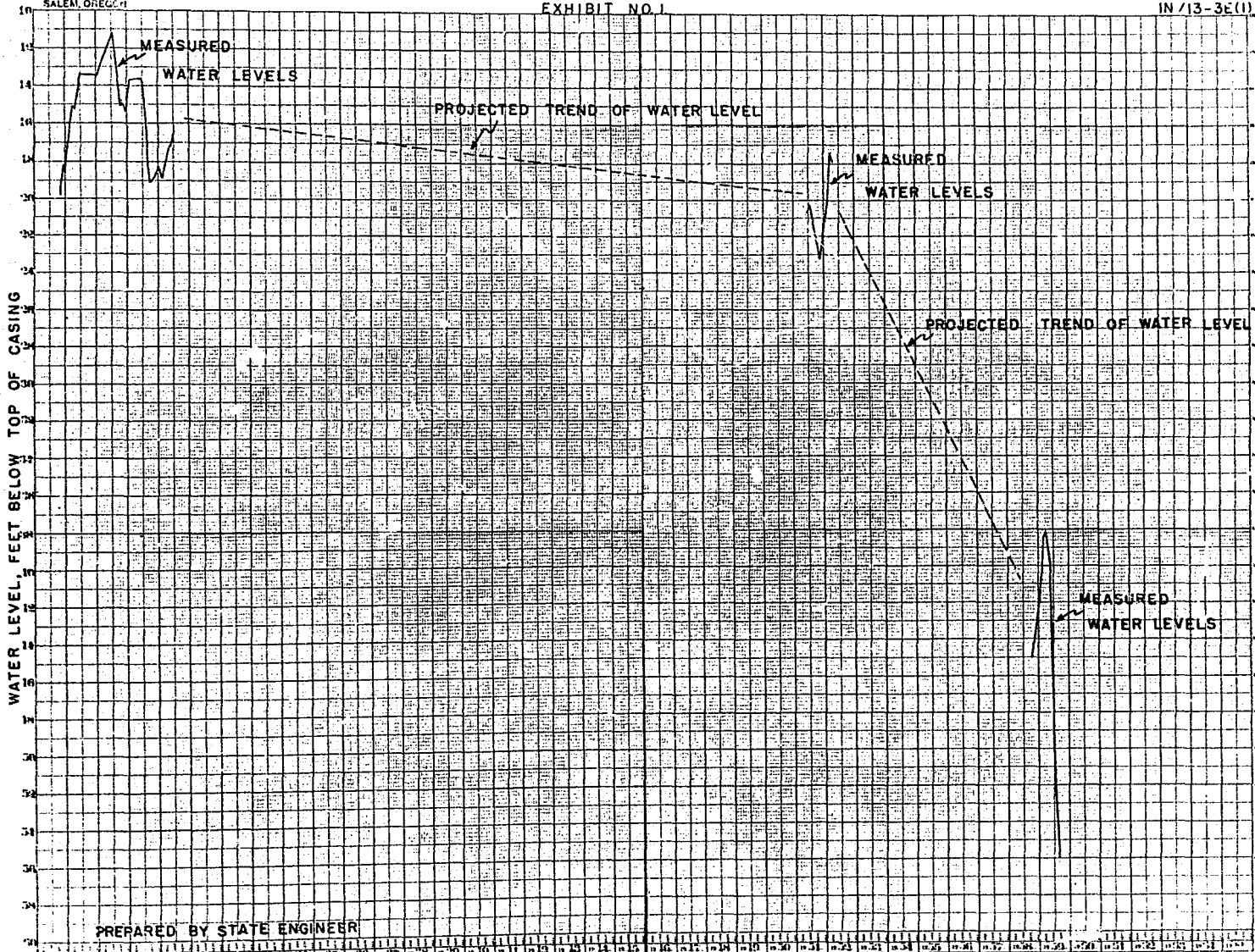
Table 1

Priority Date	Application No.	Permit No.	Certificate No.	Owner 1/	Location TWP RGE SEC.	Limitation 2/	Maximum allowable appropriation acre feet for year 3/	Cumulative total Acre Feet Per Year
2-18-54	U-667	U-598	-----	E.A.Ranslam	1N 13E 9	163 gpm for the irrigation of 29 acres	87	11839.2
4-23-54	G-33	G-294	-----	Chenoweth Irrigation CO.Op	2N 13E 32	1796 gpm for municipal use	2920	14759.2
9-7-56	G-471	G-338	-----	Harvey Machine Co.	2N 13E 28	1500 gpm for industrial use	2430	17189.2
8-19-57	G-734	G-645	-----	Harvey Machine Co.	2N 13E 28	500 gpm for industrial use	810	17999.2
8-19-57	G-735	G-646	-----	Harvey Machine Co.	2N 13E 28	1000 gpm for industrial use	1620	19619.2
8-19-57	G-736	G-647	-----	Harvey Machine Co.	2N 13E 28	1000 gpm for industrial use	1620	21239.2
8-19-57	G-737	G-648	-----	Harvey Machine Co.	2N 13E 28	1000 gpm for industrial use	1620	22859.2
8-4-58	G-1171	G-992	-----	Seufert Electro- Meturgical Company	1N 13E 1	100 gpm for industrial use	162	23021.2
3-13-59	G-1415	-----	-----	Dalles City	1N 13E 4	2000 gpm for municipal use	3240	26261.2
10-22-59	G-1607	-----	-----	R.L.Renkin	1N 13E 22	426 gpm for the irrigation of 76 acres	228	26489.2

Water level measurements in The Dalles "City Hall Well" (Exhibit 1), which are believed to be representative of the water level in all the wells that obtain water from The Dalles Ground Water Reservoir, show that there was a small decline during the period 1930 to 1951. A large decline of the water table occurred sometime during the period 1951 to 1958. Hydrographs of other wells developing ground water from The Dalles Ground Water Reservoir (Exhibits 2 through 7) show that the water table declined during 1958 and a record low position was established in the fall of that year. In general this low position ranged from 13 to 26 feet below the spring high of 1958, and some 7 to 14 feet below the low position of the previous year. The recharge to The Dalles Ground Water Reservoir during the latter part of 1958 and the early part of 1959 resulted in a recovery that ranged from 7 to 10 feet. The spring high position of the water table in 1959 was in the order of 10 to 16 feet below the spring high position of 1958. During the summer of 1959, the water table declined to a new low position, some 5 to 6 feet below the low of 1958.

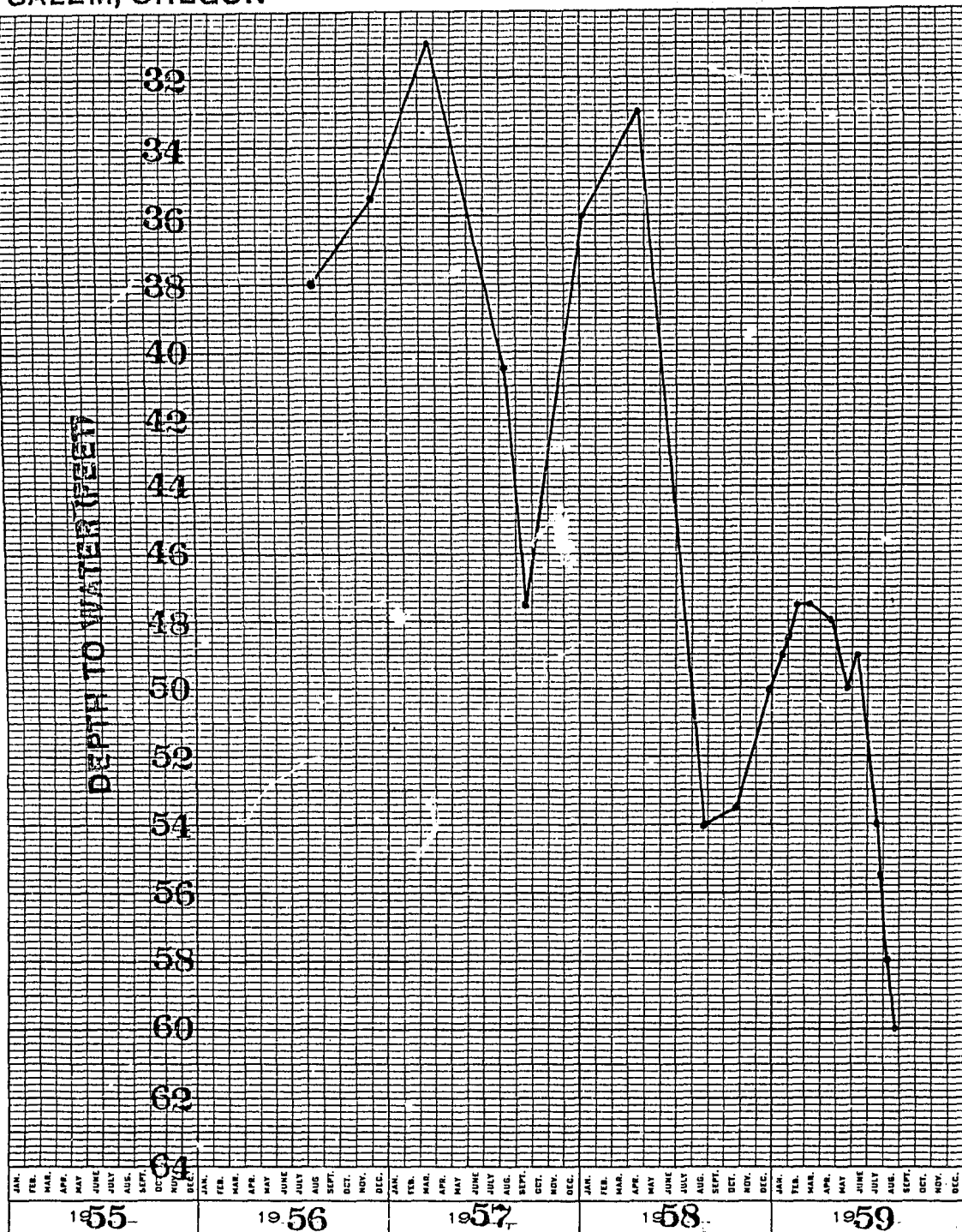
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Application G-7 (Table 1) in the name of the Independent Order of Odd Fellows was filed on March 4, 1947 for the construction of a well in Section 4, T. 1 N., R. 13 E., W.M. for the irrigation of 26 acres. Dalles City filed Application No. G-23 (Table 1) on October 16, 1953 for the construction of the "Jordan Street" well in Section 4, T. 1 N., R. 13 E., W.M. Both of these applications were protested by P. J. Stadelman, Joseph Stadelman, and Nelle Stadelman, holders of permit U-56 and Water Right Certificate 10716 on the grounds that the construction and operation of these wells would deprive them of the water to which they were entitled. Application G-23 was also protested by the Cherry Heights Irrigation Cooperative, Inc., holders of permit U-267 and Water Right Certificate 20791, on the grounds that the construction of the well and the appropriation of



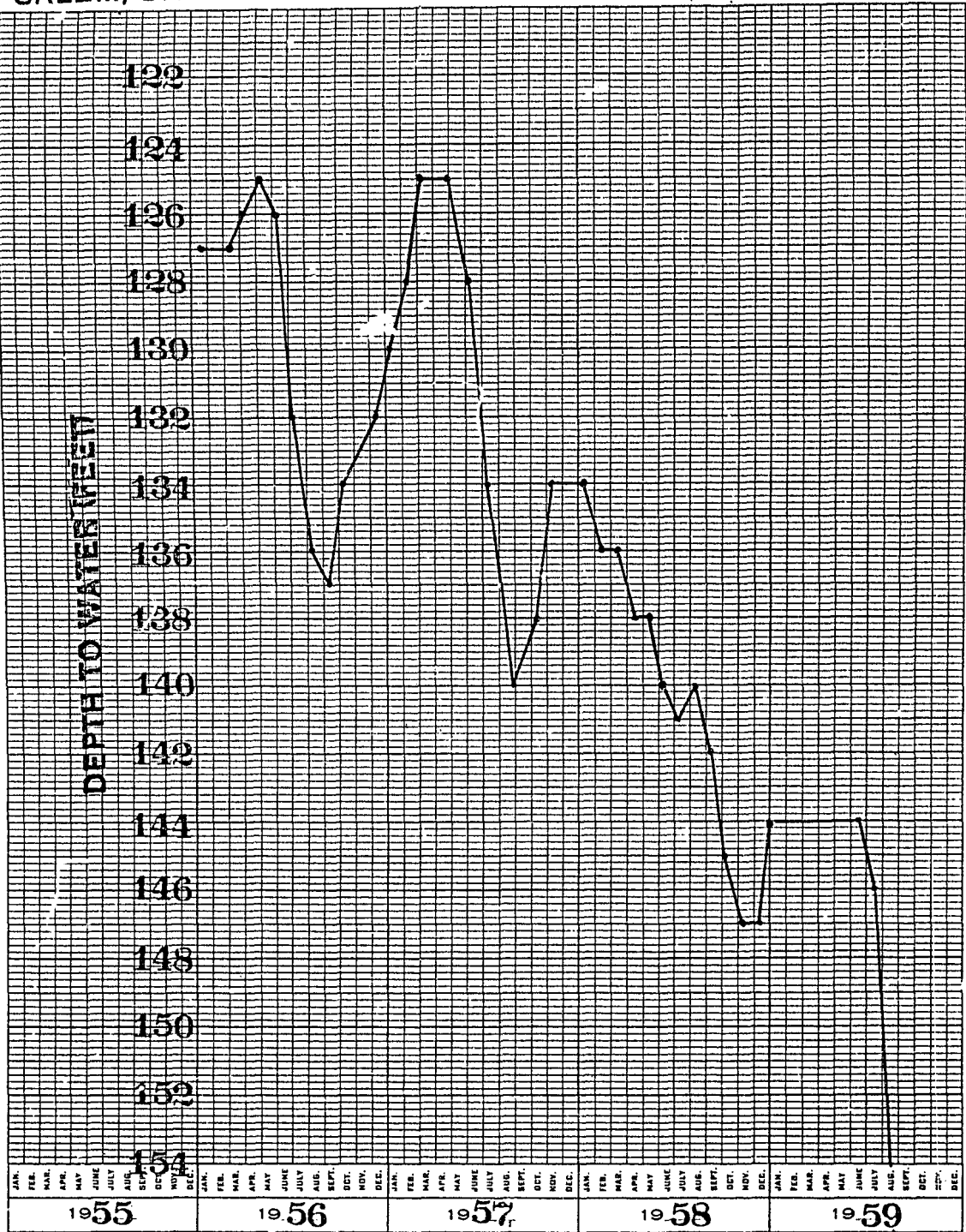
PREPARED BY STATE ENGINEER

HYDROGRAPH OF THE CITY HALL WELL

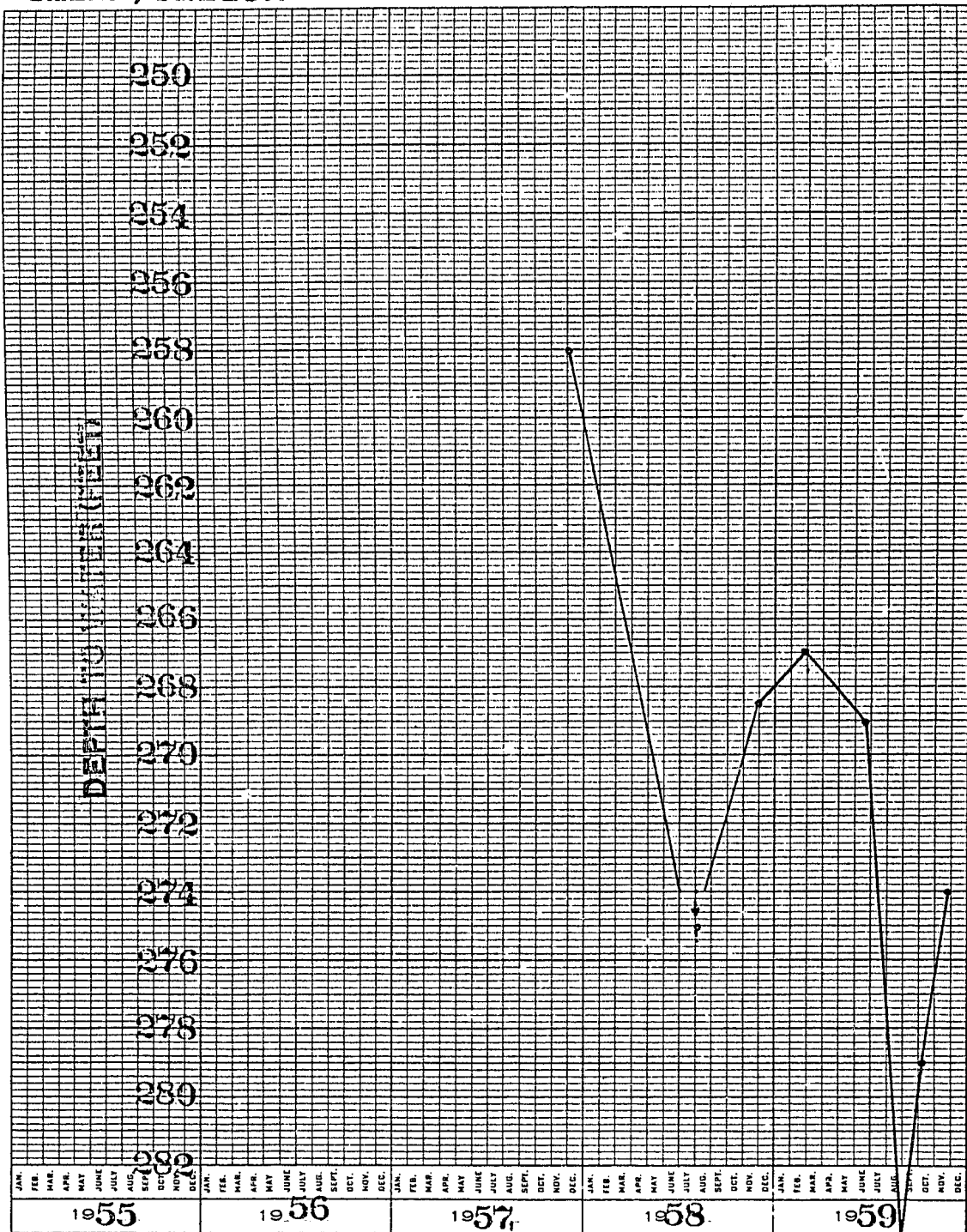


HYDROGRAPH OF THE COLUMBIA FRUIT GROWERS WELL

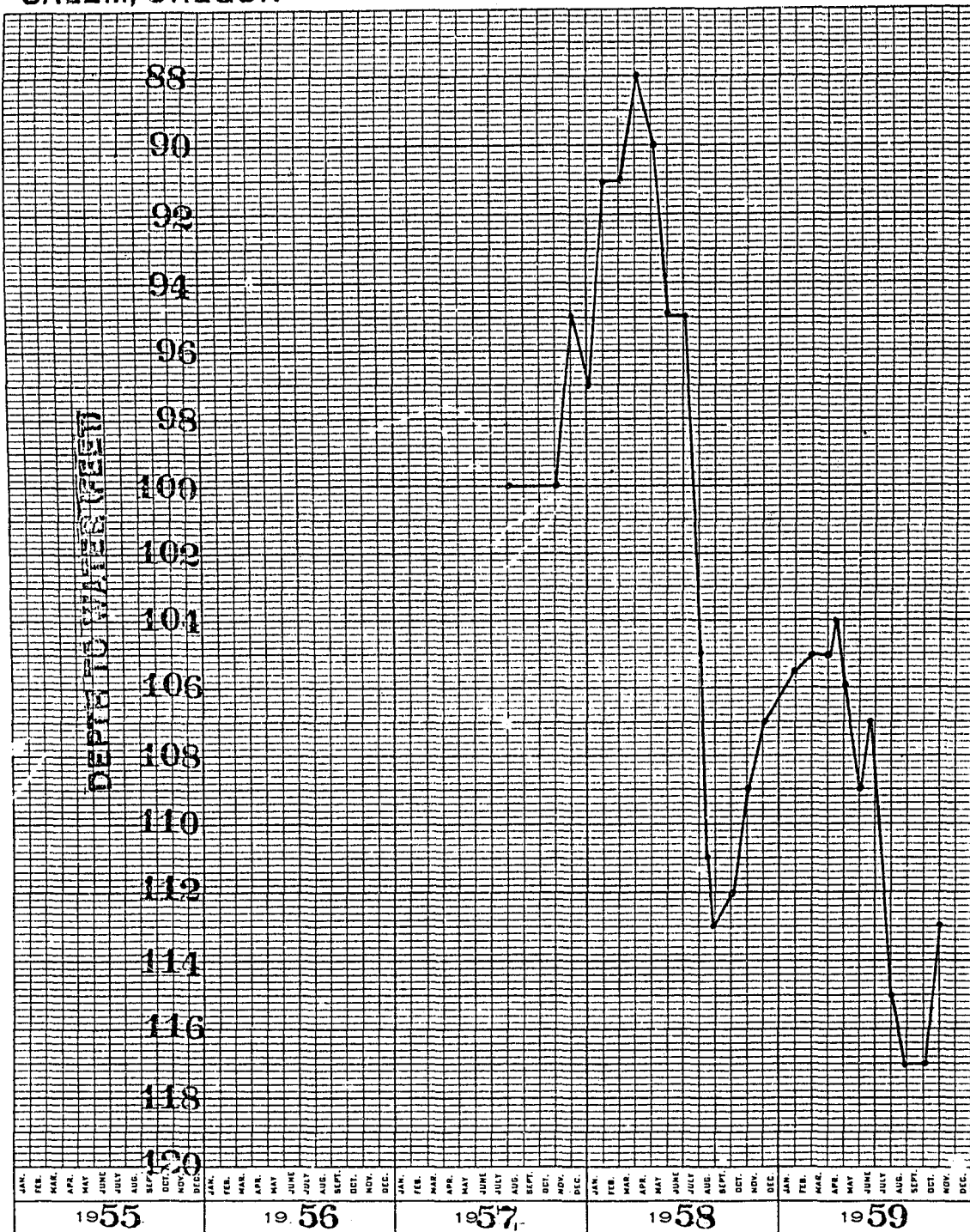
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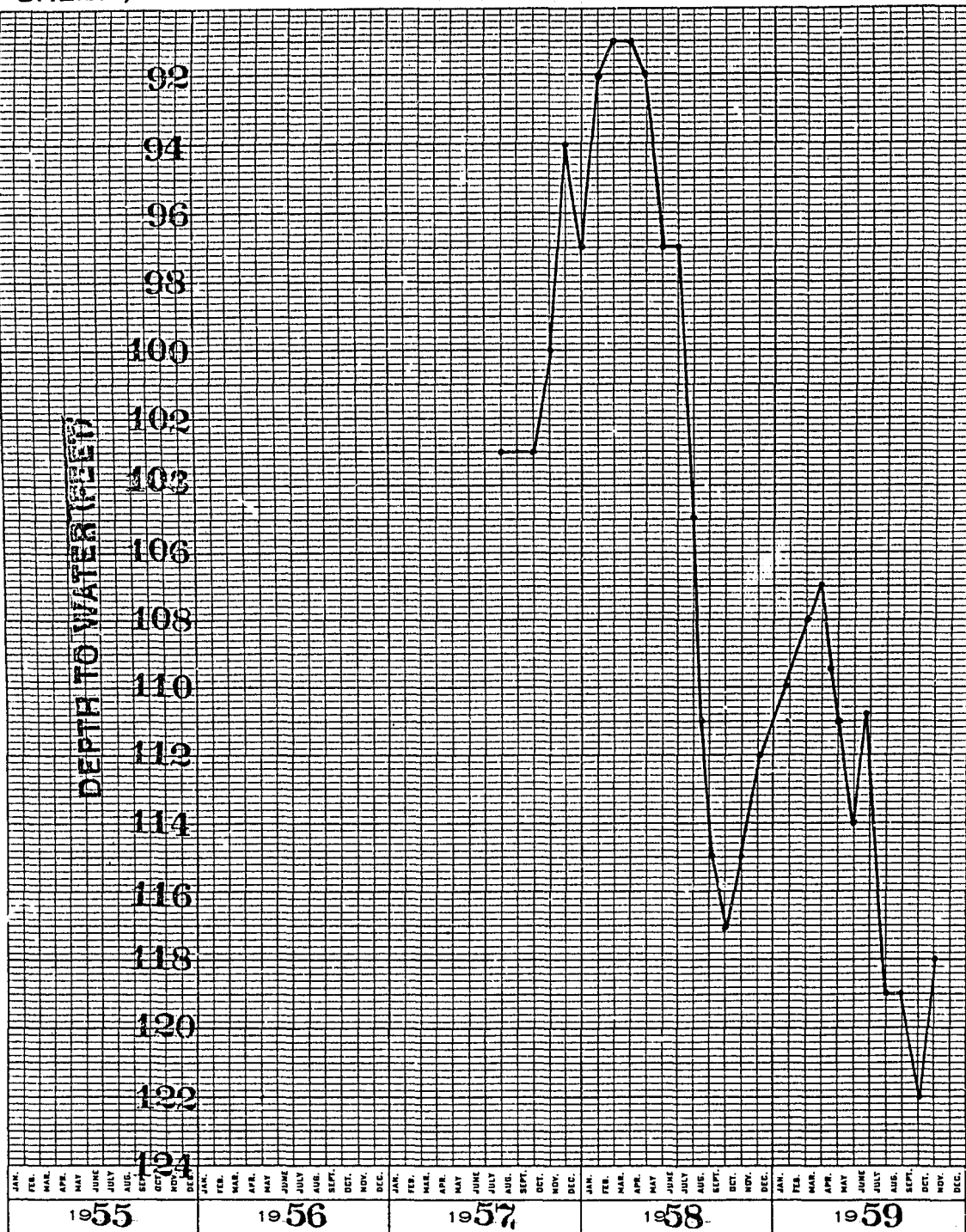
HYDROGRAPH OF THE DALLES CITY WELL "JORDAN STREET"
(Prepared by State Engineer)



HYDROGRAPH OF THE MILL CREEK IRRIGATION COOPERATIVE WELL
(Prepared by State Engineer)



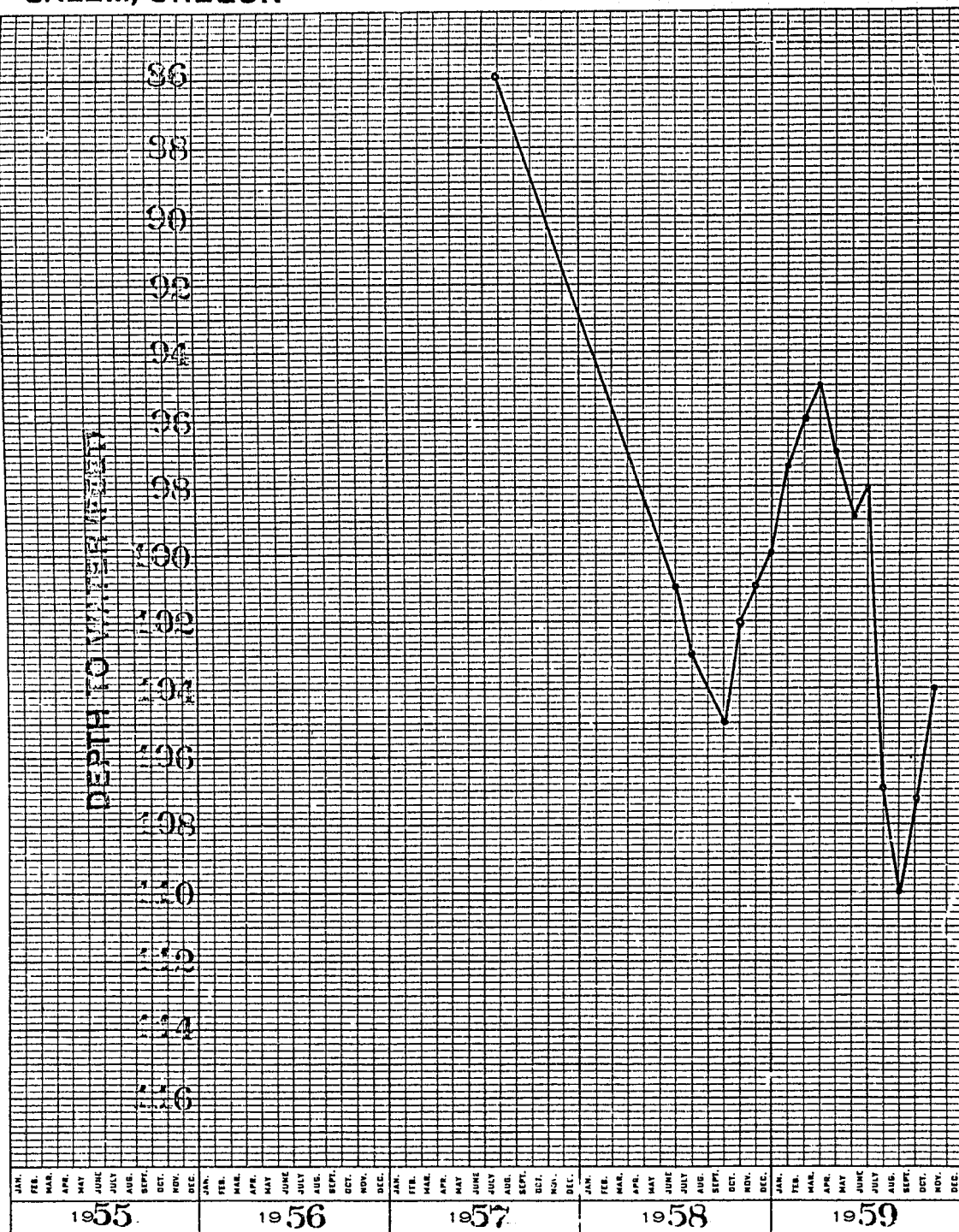
HYDROGRAPH OF THE CHENOWETH IRRIGATION COOPERATIVE
WELL NO. 3
(Prepared by State Engineer)



HYDROGRAPH OF THE CHENOWITH IRRIGATION COOPERATIVE

WELL NO. 2

(Prepared by State Engineer)



HYDROGRAPH OF THE HARVEY ALUMINUM COMPANY WELL NO. 1

(Prepared by State Engineer)

ground water would deprive them of the water to which they are entitled. Action on the approval or rejection of these two applications will be based on the findings obtained in this determination.

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The upper 100 feet of the Columbia River basalt formation beneath the lower Threemile Creek Valley contains some interconnected water bearing zones that have been developed by a few irrigation wells. This ground water reservoir is hydraulically separated from The Dalles Ground Water Reservoir, and shall be referred to herein as the "Threemile Ground Water Reservoir". Ground water in this reservoir is termed "perched ground water" as its water table is now at an altitude of about 300 feet, some 250 feet above the underlying water table of The Dalles Ground Water Reservoir.

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It was recognized as early as 1932 that the Threemile Ground Water Reservoir had only limited capacity and that interference between wells would soon cause serious ground water shortages. Piper in his report "Geology and Ground Water Resources of The Dalles Region, Oregon" 1932 (see paragraph 5) states:

"Inasmuch a well 65 (Cherry Hill District Improvement Company well) failed to reach hydraulic equilibrium during the irrigation season of 1930 and recovered only slowly after pumping was stopped, and inasmuch as wells 60 (R.F.Kelley Well) and 65 interfere rather seriously with each other, although they are 3800 feet apart, it is clear that the transmission capacity of the upper water-bearing zone (Threemile Ground Water Reservoir) is not large. Heavy pumping of these two wells alone during each irrigation season would doubtless eventually produce considerable further drawdown. If several additional wells are drilled in the same locality and are also pumped heavily the water levels are likely to be lowered to the bottoms of the wells, and the yields of the wells, even with such maximum draw-down, may be seriously reduced."

The record of water level changes that have occurred in the well of the Cherry Hill District Improvement Company is representative of the change that has occurred throughout the Threemile Creek Ground Water Reservoir. This well is located in the NW¼ NW¼, Section 23, T. 1 N., R. 13 E., W.M. The log of this well, which was drilled in 1926, is as follows:

	From (feet)	to (feet)
Soil	0	3
Sandstone, yellow	3	118
Clay, cream colored	118	139
Sandstone, buff colored	139	156
Agglomerate (?)	156	176
Clay, yellow	176	188
Basalt, porous	188	221
Basalt, dense	221	223
Basalt, porous	223	239
Basalt, waterbearing from 281 to 288 feet	239	288
Clay, dark, sticky	288	301

Water level measurements in the Cherry Hill District Improvement Company well show that there has been a marked decline since 1926. Representative water level measurements in this well are given below:

DATE	Depth to water (feet)
July 1926	147
March 1930	158
February 1931	170
March 1948	224
March 1951	242
March 1958	260

The yield of this well continued to decrease until 1958 when the owners had to curtail its use entirely for irrigation purposes.

Other wells developing water from the Threemile Ground Water Reservoir are approaching similar fates.

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Since 1932 there has been almost a continuous decline of the water table. The failure of the Cherry Hill well and the near failure of other wells developing water from the Threemile Ground Water Reservoir confirms the validity of Mr. Pipers conclusion concerning the effect of continued appropriation of water from the Threemile Ground Water Reservoir (see findings, paragraph 10).

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The following table (Table No. 2) is a list of the water right certificates, permits, and applications for permits to appropriate ground water from the Threemile Ground Water Reservoir in order of priority. Some of the wells for which permits are pending have been constructed and put into operation without a permit. This table also shows the maximum rate and amount of ground water that could be appropriated under these filings (assuming all pending applications were approved and water rights perfected). The actual amount of ground water now being withdrawn from the Threemile Ground Water Reservoir is not known. Information on the actual withdrawals of ground water are necessary to obtain estimates of the available supply.

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Three well registration statements, as provided for in ORS 537.585 to ORS 537.610, were filed for appropriation of water in The Dalles Area. Two are for the appropriation of water from the Threemile Ground Water Reservoir and one from The Dalles Ground Water Reservoir. These well registration statements are summarized on Table 3.

GROUND WATER RIGHT CERTIFICATES, PERMITS, AND APPLICATIONS

TO APPROPRIATE GROUND WATER FROM THE "THREEMILE

Table 2

GROUND WATER RESERVOIR" IN ORDER OF PRIORITY

Priority Date	Application No.	Permit No.	Certificate No.	Owner 1/	Location TWP RGE SEC.	Limitation 2/	Maximum allowable appropriation acre feet for year 3/	Cumulative total Acre Feet Per Year
6-18-30	U-28	U-27	10086	J. McClaskey	1N 13E 12	225 gpm for the irrigation of 65 acres	195	195
1-15-32	U-75	U-66	16995	D. Wagonblast	1N 13E 14	539 gpm for the irrigation of 100 acres	300	495
4-9-45	G-1	----	-----	V. R. Martin	1N 13E 14	359 gpm for the irrigation of 100 acres	300	795
4-23-45	U-168	U-162	24595	John McClaskey	1N 13E 12	225 gpm for the irrigation of 57.3 acres	172	967
5-31-50	G-9	-----	-----	V. Kelley et al	1N 13E 15	573 gpm for the irrigation of 102.1 acres	306	1273
4-15-54	G-31	-----	-----	W. Kaufman	1N 13E 14	163 gpm for the irrigation of 29 acres	87	1350
2-28-55	G-58	-----	-----	E. Elton	1N 13E 22	300 gpm for the irrigation of 74 acres	222	1572
5-3-55	G-70	-----	-----	Park Lawn Memorial Gardens	1N 13E 15	163 gpm for the irrigation of 29 acres	87	1659

1/ Last known owner or operator

2/ Assumed that pending permits would be granted on a basis of 1/80 cfs (5.62 gpm) per acre and water right perfected.

3/ Duty of 3 acre feet per acre

Table 3

WELL REGISTRATIONS IN
THE DALLES AREA, OREGON

Registration No.	Claimant	Location TWP RGE SEC.	Ground Water Reservoir	Nature of claim
GR-2707	F. V. Staak	1N 13E 14	Threemile Ground Water Reservoir	90 gpm for irrigation of 54 acres
GR-3160	D.E. Kelsey	1N 13E 4	Dalles Ground Water Reservoir	20 gpm for the irrigation of 1 acre
GR-4057	Cherry Hill District Improvement Co.	1N 13E 23	Threemile Ground Water Reservoir	Originally used for irrigation of 60.4 acres, supply has declined until the well failed in 1958.

Prepared by State Engineer

The Dalles formation, in general, has low permeability and is not everywhere capable of yielding large or moderate supplies of ground water. Consequently it has been developed primarily as a source of domestic water. Along Chenoweth Creek, permeable gravel zones near the base of the Dalles formation furnish moderate supplies of ground water. Many of the water bearing zones in the Dalles formation are isolated from one another by less permeable strata and the development of ground water from this formation has been relatively small. There is no evidence that would attest to declining water levels in the wells that develop water from this formation.

Several wells in The Dalles Area for which filings have been made, and the wells constructed, obtain water from the Dalles formation. The following table (Table No. 4) lists these wells.

Table 4

WELLS COVERED BY WATER RIGHT FILINGS IN THE DALLES AREA
THAT DEVELOP GROUND WATER FROM THE DALLES FORMATION

PRIORITY DATE	APPLICATION NO.	PERMIT NO.	CERTIFICATE NO.	OWNER	LOCATION TWP. RGE SEC.	EXTENT OF RIGHT
6-23-34	U-86	U-81	10943	W.Kaufman	1N 13E 15	11.25 gpm for the irrigation of 2 acres
4-20-53	U-589	U-544	-----	W. R. Hovey	1N 13E 11	Permit to appropriate 17.2 gpm for the irrig- ation of 3.58 acres
7-8-58	G-1046	G-975	-----	A.F.W.Cramer	1N 13E 21	Permit to appropriate 112 gpm for the irrig- ation of 20 acres.

Prepared by State Engineer

CONCLUSIONS

- 1 -

Ground water levels in The Dalles Ground Water Reservoir are declining and ground water levels in the Threemile Ground Water Reservoir have declined excessively, and the Threemile Ground Water Reservoir is overdrawn.

- 2 -

The declining water level in the wells that develop water from The Dalles Ground Water Reservoir indicates that unless there is an increase in the amount of recharge to The Dalles Ground Water Reservoir, or a reduction in the amount of withdrawal, there will be a continued decline in the water table with new low positions being established each year until it is impossible to continue the present amount of ground water withdrawal from the reservoir.

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It is concluded that changes in the stage of the Columbia River (Bonneville Pool) do not have a measurable effect on the amount of recharge to The Dalles Ground Water Reservoir and does not, as yet, serve as an important source of recharge. As the water level in The Dalles Ground Water Reservoir declines, however, the pressure differential between the water surface in the Columbia River and the water level in The Dalles Ground Water Reservoir will increase, which will cause the amount of recharge coming from the Columbia River to increase. This increase in recharge would result in a reduction in the rate of water level decline under the present rate of ground water withdrawal and could possibly result in a stabilized ground water level under the present and perhaps greater ground water withdrawals.

The near exhaustion of the ground water supply of the Three-mile Ground Water Reservoir has resulted from excessive withdrawals. The only control measure that could prove effective in correcting this condition would be those that would reduce the withdrawals and leakage from this ground water reservoir.

The construction of wells that penetrate through the Three-mile Ground Water Reservoir and the failure to seal off the water bearing zones that form the Threemile Ground Water Reservoir would have the same effect on the water supply of the Threemile Reservoir as pumping from wells. Such wells would serve as drains and water would drain out of the Threemile Ground Water Reservoir and into the underlying rock formations. Even a small rate of leakage could account for a large quantity of water over a long period of time. For example, 5 gallons per minute is equivalent to 8 acre feet of water per year. To conserve the water supply of the Threemile Ground Water Reservoir, all deep wells that pass through this reservoir should be constructed and maintained in a condition to prevent subsurface leakage.

Accurate information on the ground water withdrawals from The Dalles Ground Water Reservoir and the Threemile Ground Water Reservoir are necessary to make quantitative estimates of the capacity of these two ground water reservoirs.

From the layered character of the Columbia River basalt formation, and its great thickness in The Dalles Area, it would seem probable that there are additional ground water reservoirs lying below

and separated from The Dalles Ground Water Reservoir. The construction of deep wells and the casing off of the water encountered in The Dalles Ground Water Reservoir may furnish a source of ground water whose development would have little or no effect on the water supply in The Dalles Ground Water Reservoir.

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The development and appropriation of ground water from the Dalles formation will not have a measurable effect on the ground water supply in The Dalles Ground Water Reservoir or the Threemile Ground Water Reservoir.

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In order to insure the preservation of the public welfare, safety, and health it is necessary that the rights to appropriate ground water and priority thereof be acknowledged and protected and that reasonably stable ground water levels be determined and maintained.

NOW, THEREFORE, IT IS ORDERED that The Dalles Area be declared a critical ground water area and is to be known as "The Dalles Critical Ground Water Area". The boundary of this critical ground water area, which is shown on Exhibit 8, is described as follows:

Beginning at the northeast corner of Government Lot 2, Section 21, Township 2 North, Range 13 East, W.M., thence west to the most westerly southeast corner of the Edward Crate Donation Land Claim 38 in Township 2 North, Range 13 East, W.M., thence in a southwesterly direction to the west $\frac{1}{4}$ corner of Section 29, Township 2 North, Range 13 East, W.M., thence south along the west line of Sections 29 and 32, Township 2 North, Range 13 East, W.M. to the southwest corner of said Section 32, thence east to the northwest corner Section 5, Township 1 North, Range 13 East, W.M., thence south along the west line of Sections 5 and 8, Township 1 North, Range 13 East, W.M. to the southwest corner of said Section 8, thence in a southeasterly direction to the southeast corner of Section 21, Township 1 North, Range 13 East, W.M., thence east along the south line Section 22, Township 1 North, Range 13 East, W.M. to the southeast corner of said Section 22, thence in a northeasterly direction to the east $\frac{1}{4}$ corner, Section 23, Township 1 North, Range 13 East, W.M., thence in a northeasterly direction to the east $\frac{1}{4}$ corner, Section 13, Township 1 North, Range 13 East, W.M., thence north along the east line of Sections 13, 12, and 1, Township 1 North, Range 13 East, W.M. to the north line of the R. R. Thompson Donation Land Claim 37, in Township 1 North, Range 13 East, W.M., thence in a northwesterly direction to the southwest corner of Government Lot 1, Section 36, Township 2 North, Range 13 East, W.M., thence north along the west line of said Lot 1 to the meander line along the Columbia River, thence north to the Oregon-Washington Boundary, thence in a westerly direction along the Oregon-Washington Boundary to a point lying east of the northeast corner Government Lot 2, Section 21, Township 2 North, Range 13 East, W.M., thence west to the point of beginning all lying within Wasco County, Oregon.

It shall include all diversions of ground water from the "Dalles Ground Water Reservoir" which underlies the entire area and the "Threemile Ground Water Reservoir" which underlies the following described area within this Critical Ground Water Area.

Beginning at the southwest corner Section 22, Township 1 North, Range 13 East, W.M., thence east along the south line of said Section 22 to the southeast corner of said Section 22, thence in a northeasterly direction to the east $\frac{1}{4}$ corner, Section 23, Township 1 North, Range 13 East, W.M. thence in a northeasterly direction to the east $\frac{1}{4}$ corner Section 13, Township 1 North, Range 13 East, W.M., thence north along the east line of Sections 13, 12, and 1, Township 1 North, Range 13 East, W.M. to the north line of the R. R. Thompson Donation Land Claim 37, in Township 1 North, Range 13 East, W.M., thence in a southwesterly direction to the west $\frac{1}{4}$ corner, Section 12, Township 1 North, Range 13 East, W.M., thence in a southwesterly direction to the south $\frac{1}{4}$ corner Section 10, Township 1 North, Range 13 East, W.M., thence in a southwesterly direction to the southwest corner Section 15, Township 1 North, Range 13 East, W.M., thence south along the west line of Section 22 to the point of beginning, all lying within Township 1 North, Range 13 East, W.M., Wasco County, Oregon.

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It is FURTHER ORDERED that the water master shall regulate the control works on all wells in the above described critical ground water area other than those wells whose use of ground water is specifically exempted in ORS 537.545, so that the rate and total quantity of ground water withdrawn does not exceed that allowed under their ground water right certificates or permits. The procedure for regulating and posting such changes shall be as set forth in ORS 540.040.

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It is FURTHER ORDERED that all unlawful diversions of ground water within The Dalles Critical Ground Water Area shall cease. To this end, the water master shall investigate all known or reported violations of ORS 537.535 and shall regulate the control works of all wells found to be operating in violation of ORS 537.535 so as to prevent such violation. Written notices shall be posted at all wells so regulated stating that further unlawful diversions from that well shall result in the arrest and prosecution of the violator.

It is FURTHER ORDERED that all applications to appropriate ground water from The Dalles Ground Water Reservoir that are pending on the effective date of this order as shown on Table 1 in the findings (G-2, G-4, G-7, G-23, G-1415, G-1607) shall be approved with a priority as of the date of their filing providing the applications are completed in the form and contents as set forth in ORS 537.615 within a reasonable length of time as provided by ORS 537.620. Should it be found that a further reduction in withdrawals besides that accomplished by paragraphs 2 and 3 of this order are necessary, such additional reductions shall be made on the basis of priority.

It is FURTHER ORDERED that all applications for permits to appropriate ground water from within The Dalles Critical Ground Water Area that are filed after the effective date of this order shall be approved only on condition that no water shall be appropriated from The Dalles Ground Water Reservoir or the Threemile Ground Water Reservoir. New appropriators shall be required to develop water from either the Dalles formation, or from ground water reservoirs that underlie The Dalles Ground Water Reservoir. In the development of ground water from the reservoirs underlying The Dalles Ground Water Reservoir, wells shall be cased from the surface to at least 50 feet into the basalt flow that underlies The Dalles Ground Water Reservoir and adequately cemented into this rock unit. Wells developing water from the Dalles formation shall not penetrate into the Columbia River basalt formation.

It is FURTHER ORDERED that all applications to appropriate ground water from the Threemile Ground Water Reservoir that are pending on the effective date of this order, as shown on Table 2 (G-1, G-9, G-31,

G-58, G-70) shall be approved only on condition that they shall be drilled into The Dalles Ground Water Reservoir and effectively cased so that no water will be withdrawn from the Threemile Ground Water Reservoir.

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It is FURTHER ORDERED that the appropriation of ground water from the Threemile Ground Water Reservoir be restricted to those wells having a priority of 1932 or earlier.

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It is FURTHER ORDERED that all wells that are drilled through the Threemile Ground Water Reservoir shall be maintained in a condition so as to prevent subsurface leakage from the Threemile Ground Water Reservoir into underlying formations.

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It is FURTHER ORDERED that additional withdrawals from The Dalles Ground Water Reservoir other than those covered by paragraphs 4 and 6 of this order shall be restricted solely to the exempted uses and limitations set out in ORS 537.545.

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It is FURTHER ORDERED that additional withdrawals of ground water from The Threemile Ground Water Reservoir shall be restricted solely to stock and domestic uses. Ground water appropriated from this ground water reservoir for stock shall be piped to watering tanks or troughs which shall be equipped with control works so as to prevent the overflow and waste of ground water. Ground water appropriated for domestic purposes shall be restricted to a maximum beneficial use of 15,000 gallons per day, as set forth in ORS 537.545. Additional development of ground water from the Threemile Ground Water Reservoir for any commercial or industrial purpose, even in amounts less than 5,000 gallons per day, is prohibited.

It is FURTHER ORDERED that the owners or operators of all wells in the above described critical ground water area other than those whose use of ground water is specifically exempted in ORS 537.545 and those wells specifically mentioned in paragraph 17 of the findings shall, prior to any ground water withdrawal after 90 days from the date of this order, equip their wells with totalizing water meters and shall maintain a record of the monthly withdrawal of ground water from each well. A copy of these records shall be furnished to the State Engineer within 30 days from the close of each calendar year.

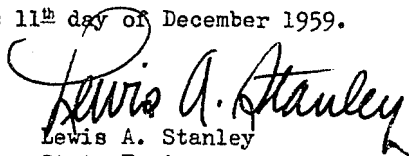
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It is FURTHER ORDERED that the owners or operators of all wells in the above described critical ground water area other than those whose use is specifically exempted in ORS 537.545 and those specifically mentioned in paragraph 17 of the findings shall, prior to any ground water withdrawal after 90 days from the date of this order, equip their wells with control valves so that the discharge can be regulated to the rate of withdrawal allowed under their water right certificates or ground water permits.

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It is FURTHER ORDERED that the State Engineer shall make an annual review of the ground water situation in The Dalles Critical Ground Water Area for the purpose of determining whether the control provisions provided by the order are effective or whether additional controls, provisions, or additional reduction in ground water withdrawals are required.

Dated at Salem, Oregon this 11th day of December 1959.


Lewis A. Stanley
State Engineer

