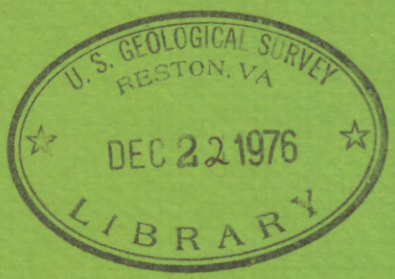
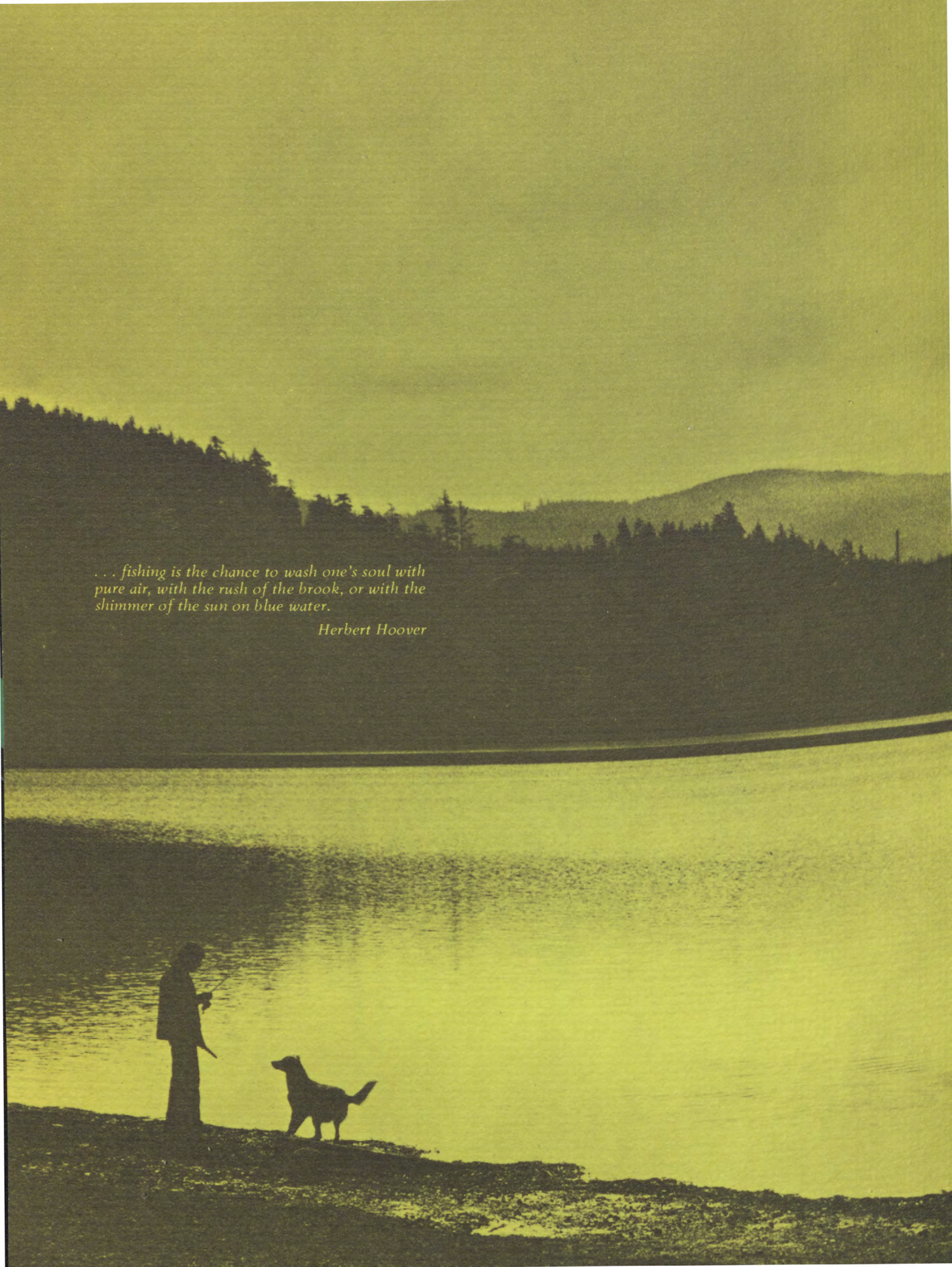
Lakes of Oregon

VOLUME 3

Hood River, Multnomah, Washington, and Yamhill Counties




. . . fishing is the chance to wash one's soul with
pure air, with the rush of the brook, or with the
shimmer of the sun on blue water.
Herbert Hoover

OPEN-FILE REPORT ... 1975

Lakes of Oregon

VOLUME 3

Hood River, Multnomah, Washington, and Yamhill Counties

By

M. V. Shulters

Prepared by
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

in cooperation with the
OREGON STATE ENGINEER

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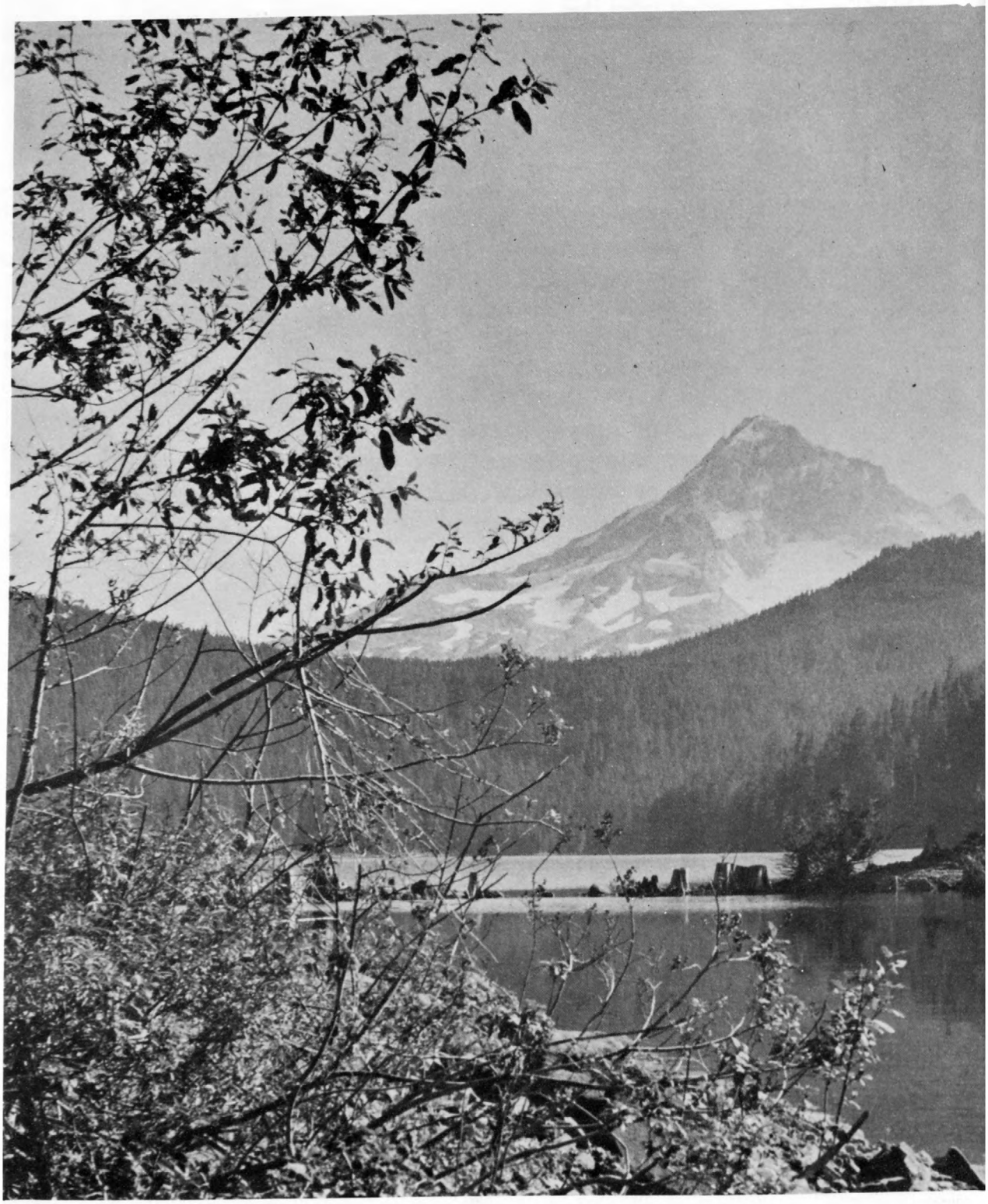
Table of Contents



Bull Run Lake

Introduction

An inventory of lakes and reservoirs of Oregon is essential for a complete evaluation of the total surface-water supply of the State and to provide a basis for answering questions about Oregon's lakes. Much of the information on lakes and reservoirs previously collected by Federal and State agencies has never been published. These data were compiled and used as a basis for collecting additional information. This report provides information for use by city, county, and State planning groups as well as for sportsmen, tourists, and others interested in preserving the recreational value of Oregon's lakes.

Because of the large number of lakes and reservoirs in Oregon, a single report covering the State would be bulky. Therefore, the lake information is being published in several volumes on a county or multicounty basis. Volume 1, published in 1973, covered Clatsop, Columbia, and Tillamook Counties; volume 2, published in 1974, included Benton, Lincoln, and Polk Counties. Hood River, Multnomah, Washington, and Yamhill Counties were selected for volume 3. (See fig. 1.)

In addition to office compilation of existing data, each lake was also visited. Most visits were made in summer or early fall when lakes were most accessible and when water temperature and biological activitiy were at a maximum.

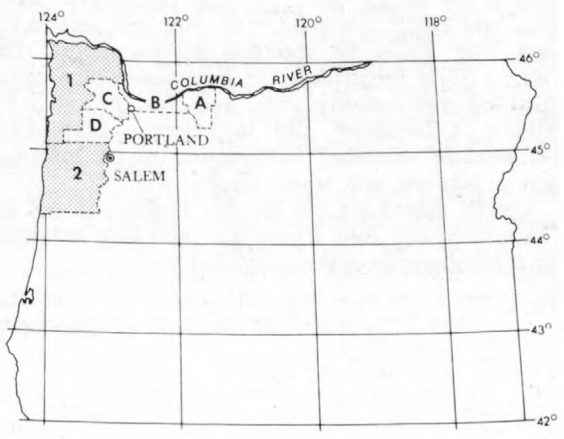


Figure 1.—Index map of Oregon showing locations of (A) Hood River, (B) Multnomah, (C) Washington, and (D) Yamhill Counties, and areas covered in volumes 1 and 2.

CRITERIA USED FOR DESIGNATING LAKES

There are no commonly accepted criteria for distinguishing among lakes, ponds, pools, sloughs, and other water bodies. In general, any water body with a surface area greater than 5 acres (20,000 m^2) was included as a lake in this inventory. Natural ephemeral lakes are not included nor are ponds several acres in size that are used solely for stock water. Therefore, lakes were selected for inclusion in this report based primarily on size and on the author's judgment of their actual or potential use.

Natural lakes, as well as manmade ponds and reservoirs, all form and disappear with surprising frequency. Maps may not show all the lakes in a given area nor do they indicate recent changes. Some large lakes shrink into several small ones during the dry season, and the process is reversed when the rains come. Named lakes in Hood River, Multnomah, Washington, and Yamhill Counties that did not meet the criteria for inclusion in this report are listed on page 7.

RESERVOIRS

In general, any manmade body of water is classed as a reservoir.

A steadily increasing number of reservoirs are being constructed in Oregon. Because many of these are not shown on the latest maps, their existence had to be determined from other sources, and some that qualify for inclusion in this report may have been missed.

ACKNOWLEDGMENTS

This report was prepared by the Geological Survey, Water Resources Division, in cooperation with the Oregon State Engineer. Several agencies in addition to the Oregon State Engineer contributed much time and effort searching their files and reports for data that could be included in this report. The Oregon State Department of Environmental Quality provided water-quality data, and the Oregon State Wildlife Commission and the Oregon State Fish Commission furnished bathymetric maps, information on lake use, and other valuable data.

Special thanks are due Stanley F. Kapustka, P. R. Concannon, and John Friday for their help in taking aerial photographs of the individual lakes.

Explanation of Terms

Information for each lake included in this report has been classified under several general terms. Most of the numerical information is given in English units; water-quality data are reported in metric units. Factors for converting between English and metric units are given in table 1.

Table 1.–FACTORS FOR CONVERTING ENGLISH UNITS TO INTERNATIONAL SYSTEM (SI) UNITS

Multiply English units	By	To obtain SI units
Feet (ft)	0.3048	Metres (m)
Miles (mi)	1.609	Kilometres (km)
Acres	4047	Square metres (m^2)
	.4047	Square hectometres (hm^2) 1/
	.004047	Square kilometres (km^2)
Square miles (mi^2)	2.590	Square kilometres (km^2)
Acre-feet (acre-ft)	1233	Cubic metres (m^3)
	1.233×10^{-3}	Cubic hectometres (hm^3)
	1.233×10^{-6}	Cubic kilometres (km^3)
Cubic feet per second (ft^3/s)	.02832	Cubic metres per second (m^3/s)

1/ One hectometre is equal to 100 metres.

An explanation of terms used on the individual lake sheets, with comments on their significance and on accuracy of the data, follows:

Identification number.–The identification number, in parentheses preceding the lake name, is used only for identifying the lake on the county maps. (See figs. 4-7). Within each county, lakes are listed in alphabetical order and numbered serially.

Survey date.–The survey date, in the upper right-hand corner of the page, gives the date the lake was visited by the Geological Survey field party. Most of the field data, including water-quality data, depth soundings, and observations of inflow and outflow, were obtained during this visit. Separate dates are shown where specific data were collected at a time other than the survey date.

Location.–Latitude, longitude, township, range, and section were determined from U.S. Geological Survey quadrangle maps (topographic series; see p. 8), with the largest scale map available for the lake area given by name and size; for example, Portland 7½-minute quadrangle map. The latitude and longitude identifies the point of surface-water outflow, or if there is no outflow, the southernmost tip of the lake. Direction and distance, rounded to the nearest one-half mile (see table 1), from prominent landmarks, such as towns, roads, or rivers, are included to aid in rapid, easy location. In some instances, a lake is not shown or named on the topographic map and is so indicated.

Drainage basin.—The smallest well-known river basin in which the lake is located is shown first; the major drainage system is listed in parentheses following the basin. For example, the Deschutes River is the smallest wellknown river basin in which Badger Lake (p. 12) is located, and it is part of the major drainage system known as the Lower Columbia River basin; therefore, the drainage basin is reported as Deschutes River (Lower Columbia River). For a few lakes, the major drainage system is the smallest well-known basin. An example of this is Lindsey Pond (p. 20), which is in the Lower Columbia River basin. A lake that contributes no outflow to the basin cited is reported as "noncontributing."

Drainage area.—The surface-drainage area, in square miles (mi^2), is the area that contributes water to the lake. These areas were delineated on U.S. Geological Survey topographic maps and measured by planimeter. Drainage areas for some lakes were classified as indeterminate because either the surface-drainage area cannot be accurately delineated or the inflow consists primarily of precipitation and ground water.

Surface area.—The surface areas of lakes, in acres, were obtained from several sources. Published reports were an important source of information; however, most surface areas were measured by planimeter on aerial photographs. Because the surface area of many lakes varies widely, depending on the surface elevation and time of year, areas shown in this report are intended only to describe the general size of the lake. Reservoir areas are generally taken from construction drawings and represent normal pool.

Surface elevation.—A single elevation, in feet (ft) above mean sea level, estimated from the best available topographic maps or other source, is shown for most lakes. For the few lakes where lake levels had been monitored, a seasonal range in elevations is shown.

Volume.—Lake volumes, in acre-feet (acre-ft), were obtained by computing and then summing the volume of each stratum of water between successive contours on the bathymetric map. Each volume was computed using a standard equation incorporating the areas within both the upper and lower contours of the stratum being computed and the vertical distance between them. Reservoir capacities are generally determined from construction drawings and represent normal pool. Because volumes can vary widely between seasons and from year to year, volume figures reported are intended to illustrate only the relative size of the lakes. Where data were not adequate to compute volume, it is reported as "not determined."

Inflow.—Information pertaining to the surface inflow, including the name of a stream or streams and direction of flow, is given. Although many lakes receive inflow from several streams, inflow generally could not be measured because the lakes were visited during the low-flow season. Where a rate is reported for inflow, it generally was estimated by computing cross-sectional area of the channel and by timing drift. The rate of inflow, where it was measured or estimated, is reported in cubic feet per second (ft^3/s). Inflow from direct precipitation on the lake or from ground-water seepage was neither measured nor estimated.

Outflow.—Generally, surface outflow is confined to one channel. All available information pertaining to it, including the name of the stream and general direction of outflow, is given. Some lakes have no visible outflow, and the water loss other than that from evaporation and transpiration is by ground-water outflow. Where possible, surface outflows were estimated, but no attempt was made to determine ground-water outflow.

Use.—Information on recreational use of the lakes and their surrounding areas, whether private or public, was obtained from other publications, by observation, and from local residents.

Remarks.—Useful information that is not easily classified under the above headings is listed under REMARKS. Topics that might be included in this section are:

1. Descriptive information.
2. Directions or access.
3. Water rights.
4. Qualifying statements.
5. References that provide additional information pertaining to the lake are indicated by numbers from the list of references (p. 8).
6. Agencies furnishing bathymetric data.

Bathymetric map.—Depth contours on the map were made from soundings taken on the SURVEY DATE or from bathymetry furnished by some other agency. Soundings were made by the U.S. Geological Survey field party, using either a sounding line or a recording-chart fathometer, and should be considered approximate. Depths are reported in feet and can be converted readily to metres using a conversion factor (see table 1) or the feet-metre scale on the dissolved oxygen-temperature grid.

The sampling site (symbol ▼) of each lake is shown on the bathymetric map, as are marshes and other features. Aerial photographs were used to estimate the horizontal scale, which should be considered approximate. Inflow and outflow streams are shown graphically by direction and location.

Water-Quality Data

The water-quality data reported in this volume were collected at the time indicated on the SURVEY DATE. Most of the quality data were determined from samples collected 1 foot (0.3 m) below the water surface at the sampling site shown on the bathymetric map. Dissolved oxygen, temperature, pH, and conductivity were measured at various depths.

The percentage of cloud cover is given as an indicator of the amount of direct sunlight reaching the lake at the time of sampling. Increasing light intensity in the presence of chlorophyll-bearing aquatic plants increases photosynthetic activity which, in turn, produces more dissolved oxygen and increases the pH of the water in the lighted (trophogenic) zone.

Sampling sites are generally near the deepest part of each lake and are considered to be reasonably representative of the physical and chemical characteristics of the entire lake. Some of the larger lakes or those occupying irregular basins were sampled at several sites.

Data on alkalinity, hardness, dissolved solids, and dissolved oxygen are reported in milligrams per litre (mg/l). One milligram per litre is a weight of 1 milligram of the particular constituent dissolved in 1 litre of water. At the low concentrations given in this report, 1 mg/l is equivalent to 1 ppm (part per million) used in some water-quality reports.

On-site analysis

Chemical analyses were made of waters from several lakes in each county to determine concentrations of major ions in solution, plus iron, nitrogen, phosphorus, and silica. The report "Water-quality criteria, 1972" (Environmental Protection Agency, Environmental Studies Board, 1972), gives limits for each constituent recommended for public water supplies and other uses. All the plant nutrients, with the exception of nitrogen and phosphorus, are usually sufficiently abundant so as not to limit plant growth. Silica ($si0_2$) forms the basis of the skeletal structure of an important group of algae, the diatoms, and can be depleted rapidly by a large diatom population. During periods of thermal stratification, the chemical characteristics of water in the hypolimnion can differ significantly from the warmer water in the oxygen-rich epilimnion. (See fig. 3.)

Water samples were analyzed at the U.S. Geological Survey central laboratory in Salt Lake City.

To help those unfamiliar with the technical terms and the measurements made in this study, the methods used and the significance of the variables measured are reviewed briefly for each quality parameter.

pH.—The pH of a solution is a measure of the effective hydrogen-ion activity. The range of pH values is from 0 to 14; solutions in the range of 0 to 7 are considered to be acidic, and those in the range of 7 to 14 are considered to be alkaline. At a pH of 7, water is neither acidic nor alkaline, but is a neutral solution. The pH scale is logarithmic, so that a change of one pH unit represents a tenfold change in hydrogen-ion activity.

The pH of lake water may be altered through photosynthesis and respiration by waterborne plants, as well as by other activities. The uptake of carbon dioxide during photosynthesis increases the pH of the water, whereas the release of carbon dioxide during respiration decreases the pH value.

Profiles of pH were taken with a portable pH meter, but only surface and bottom, 1 foot (0.3 m) above lake bottom, values are reported.

Conductivity.—Specific conductance, or conductivity, is a measure of the ability of water to conduct an electrical current and is expressed as micromhos per centimetre at 25°C (Celsius). The specific conductance is low for pure water, but increases as water becomes more mineralized. Hence, specific conductance is related to the concentration of ionized minerals in the water. In this report, specific conductance was measured for samples taken at various depths, but only the values for samples collected at the surface and 1 foot (0.3 m) above the bottom of the lakes are reported.

Alkalinity.—Alkalinity is the capacity of water to neutralize an acid. In natural waters, alkalinity is caused primarily by the presence of bicarbonate, carbonate, or hydroxide ions. For this study, alkalinity is reported in milligrams per litre as $CaCO_3$ (calcium carbonate) and was determined in the field by titrating the samples with 0.01639 N sulfuric acid to a pH of 4.5.

Total hardness.—Historically, water has been classified as "hard" or "soft" depending on how readily the water produces a lather when mixed with soap. For this study, hardness values are reported in milligrams per litre as $CaCO_3$. Any water with hardness of less than 60 mg/1 as $CaCO_3$ is considered to be soft on an arbitrary scale used by the Geological Survey.

Dissolved solids.—Dissolved solids was determined by evaporating a known quantity of water at 180°C and weighing the residue. The U.S. Public Health Service (1962) has established a recommended limit of 500 mg/1 of dissolved solids for drinking water supplies, although this limit may be exceeded if no better water is available. Commonly, the numerical value for dissolved solids (milligrams per litre) is about two-thirds the specific conductance value (in micromhos). However, in the low range of conductivity values found in many parts of Oregon, either proportionately high silica concentrations or abundant organic material may contribute significantly to the dissolved-solids content, causing a higher value than might be expected by comparison with conductivity readings.

Dissolved-oxygen profile.—The concentration of dissolved oxygen in water is a function of the temperature and salinity of the water and of the partial pressure of atmospheric oxygen in contact with the water. Oxygen solubility is inversely related to the water temperature and salinity. The warmer the water the less oxygen it will contain. The oxygen concentration in water is continually being altered by life processes such as photosynthesis and respiration and by complex chemical reactions. In lakes at low altitude, such as along the Oregon coast where atmospheric pressure is high, more oxygen tends to go into solution than it does in lakes at higher altitudes.

Although dissolved-oxygen values in this report represent only one group of observations, the values will provide a guide for evaluating the suitability of a lake for fish life and for other clean-water biota. A generalization based on thousands of field determinations on inland waters (Welch, 1952) states that "dissolved oxygen at levels of 3 ppm [mg/1] or lower should be regarded as hazardous to lethal [for fish] under average stream and lake conditions; and that 5 ppm [mg/1] or more of dissolved oxygen should be present in waters, if conditions are to be favorable for freshwater fishes." This statement, which applies mainly to warm-water fish, assumes that other vital requirements are held within their proper limits. The combined influence of dissolved oxygen and temperature on rainbow trout is illustrated in figure 2, which is patterned after figure 11 in a report by Smith and Bella (1973).

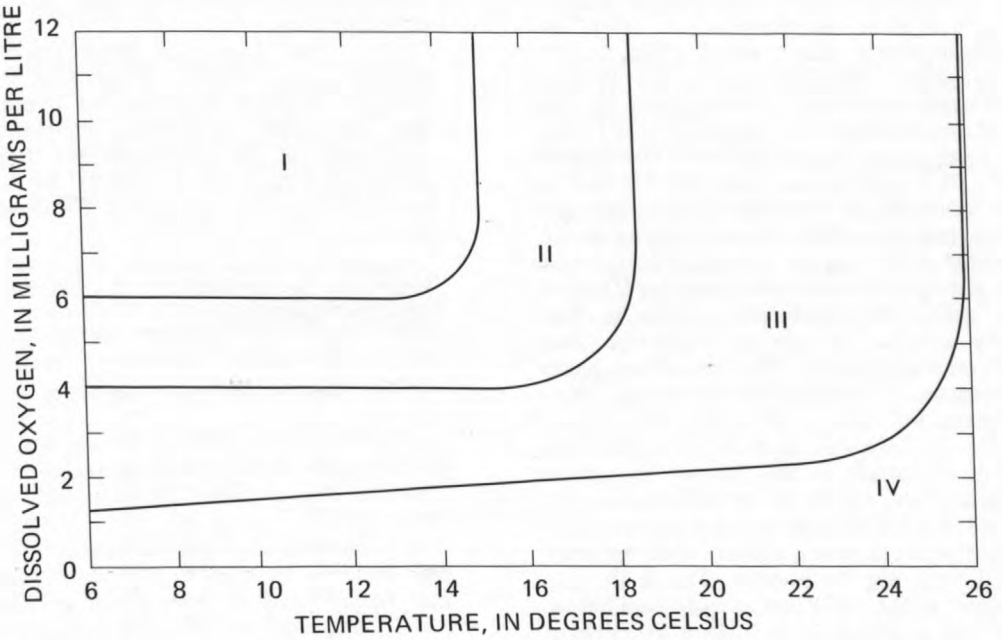


Figure 2. — Favorable to lethal combinations of dissolved oxygen and temperature for rainbow trout. Zone I represents most favorable combinations, whereas zone IV represents combinations.

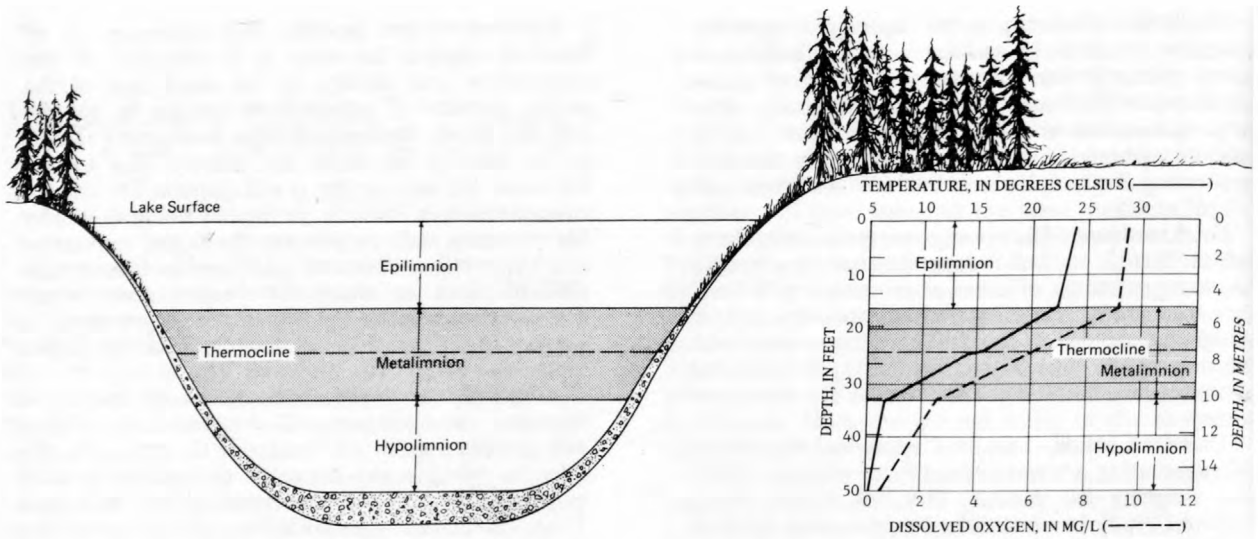


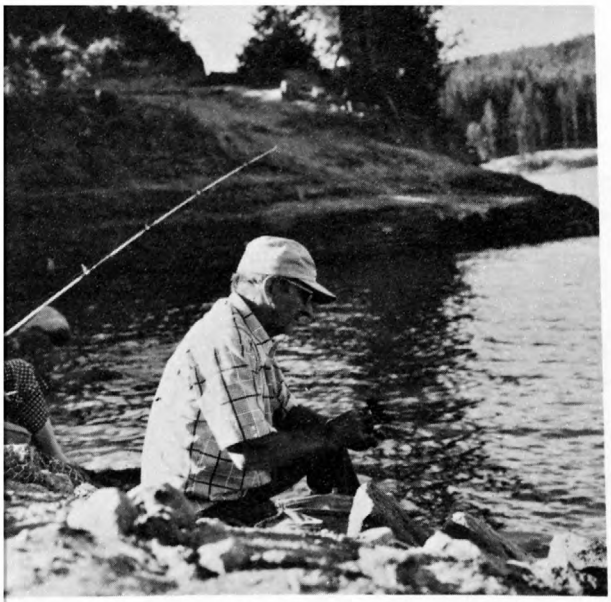
Figure 3.—Idealized thermal stratification during summer in a lake in the North Temperate Zone.

Temperature profile.—Temperature, which varies in lakes with depth and time of year, is a critically important controlling factor in the aquatic environment. Life processes, chemical-reaction rates, and many physical events occur only within definite temperature ranges. Because the density of fresh water is primarily a function of temperature, layering of water of equal temperature (homothermal) often occurs in lakes. Fresh water reaches its maximum density at 3.98°C and is less dense either above or below this temperature. Generally during the summer, a warm, oxygen-rich, circulating layer of water, the epilimnion (upper layer), is separated from the cooler, oxygen-poor hypolimnion (deep layer) water by a zone called the metalimnion, which is characterized by a rapid change in temperature and oxygen with increasing depth. The plane of maximum rate of decrease in temperature within the metalimnion (transition layer) is termed the "thermocline" (fig. 3). Temperature profiles for the lakes depict this stratification. In late fall, as the surface waters begin to cool, the stable stratification condition that had developed during the warm summer months begins to break down, the lake soon becomes homothermal from top to bottom. This is the fall turnover period. If the water continues to cool below 3.98°C, a reverse stratification will occur with colder water overlying water several degrees warmer. This is the winter stratification period. After another mixing period or turnover in the spring, the entire process begins again. These temperature variations in lakes influence the suitability of a lake for uses such as recreation, fish production (see fig. 2), and public water supplies.

For most lakes, the temperatures listed were probably close to the maximum for the year when sampled. However, temperatures at other times may vary considerably from these, depending on weather conditions, inflow, lake depth, etc. For most lakes, temperature was plotted against depth, and a solid line was drawn on the graph between the plotted points.

Temperatures are reported in degrees Celsius (°C), which can be converted to degrees Fahrenheit (°F) using the following table:

°C	°F	°C	°F	°C	°F
0	32	10	50	20	68
1	34	11	52	21	70
2	36	12	54	22	72
3	37	13	55	23	73
4	39	14	57	24	75
5	41	15	59	25	77
6	43	16	61	26	79
7	45	17	63	27	81
8	46	18	64	28	82
9	48	19	66	29	84



Hagg Lake

Transparency.—Transparency, or penetration of light, refers to the depth to which light can penetrate through water. Because photosynthesis can occur only to depths where sufficient light is available, transparency is one of the more important parameters that govern the biological activity of a lake.

Measurements consisted of lowering into the water a 20-centimetre Secchi disc on a graduated line, noting the depth at which it disappeared, then lifting the plate and noting the depth at which it reappeared. The average of the two readings gives the reported transparency depth and has been calculated to be in the region of 5 percent light transmittance (Reid, 1961). Depths are reported to the nearest 0.1 metre. Secchi disc measurements provide comparative information on the transparency of water in the various lakes.

Color.—Color value is determined by a comparison of the water with standardized colored-glass discs and is reported in platinum-cobalt (Pt-Co) units. Water color in lakes generally results from the decomposition of vegetation, which gives the water a brown, tea-like color.

Coliform bacteria.—For this report, the fecal coliform bacteria group is defined as all organisms that produce blue colonies when grown on M-FC medium at 44.5°C for 24 hours. Because fecal coliforms are that part of the total coliform group that is present in the gut or feces of warmblooded animals, their presence may indicate recent and possibly dangerous contamination. The reporting unit is the number of colonies per 100 millilitre sample. If any coliform bacteria are indicated, the water should be considered to have disease-producing potential.

Other Named Lakes

Some of the named lakes on the U.S. Geological Survey topographic maps were not studied because when they were visited they did not meet the established criteria. However, because at other times of the year these lakes might be of some importance and would therefore meet the criteria, they are listed below by county.

Lake	Section	Township	Range
Hood River County			
Bear Lake	18, 19	2 N.	9 E.
Dollar Lake	5	2 S.	9 E.
Dublin Lake	2	1 N.	7 E.
Hicks Lake	10	1 N.	8 E.
Mud Lake	2	1 N.	8 E.
Ottertail Lake	11	1 N.	8 E.
Oval Lake	1	3 S.	10 E.
Scout Lake	14	1 N.	8 E.
Teacup Lake	11	3 S.	9 E.
Multnomah County			
Big Bend Lake	16	1 S.	7 E.
Doane Lake	13	1 N.	1 W.
Jewit Lake	18	1 N.	3 E.
	12, 13	1 N.	2 E.
Rainbow Lake	18	2 N.	1 W.
	12, 13	2 N.	2 W.
Ramsey Lake	26	2 N.	1 W.
Washington County			
Holcomb Lake	13	1 N.	2 W.
Yamhill County			
Cedar Lake	22	4 S.	9 W.
Chandler Lake	6	6 S.	5 W.
Keene Reservoir	20	5 S.	3 W.
Meadow Lake	8,9,16	3 S.	6 W.
North Lake	19	4 S.	8 W.
South Lake	30	4 S.	8 W.
Tustin Lake	10	4 S.	4 W.

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A State index showing topographic maps is available free on request to the Distribution Section, U.S. Geological Survey, Denver Federal Center, Lakewood, Colo. 80225. The index contains lists of special maps, addresses of local map reference libraries, local map dealers, and Federal map distribution centers. An order blank and detailed instructions for ordering maps are supplied with each index.

Hood River County

Wahtum Lake

Lakes of Hood River County

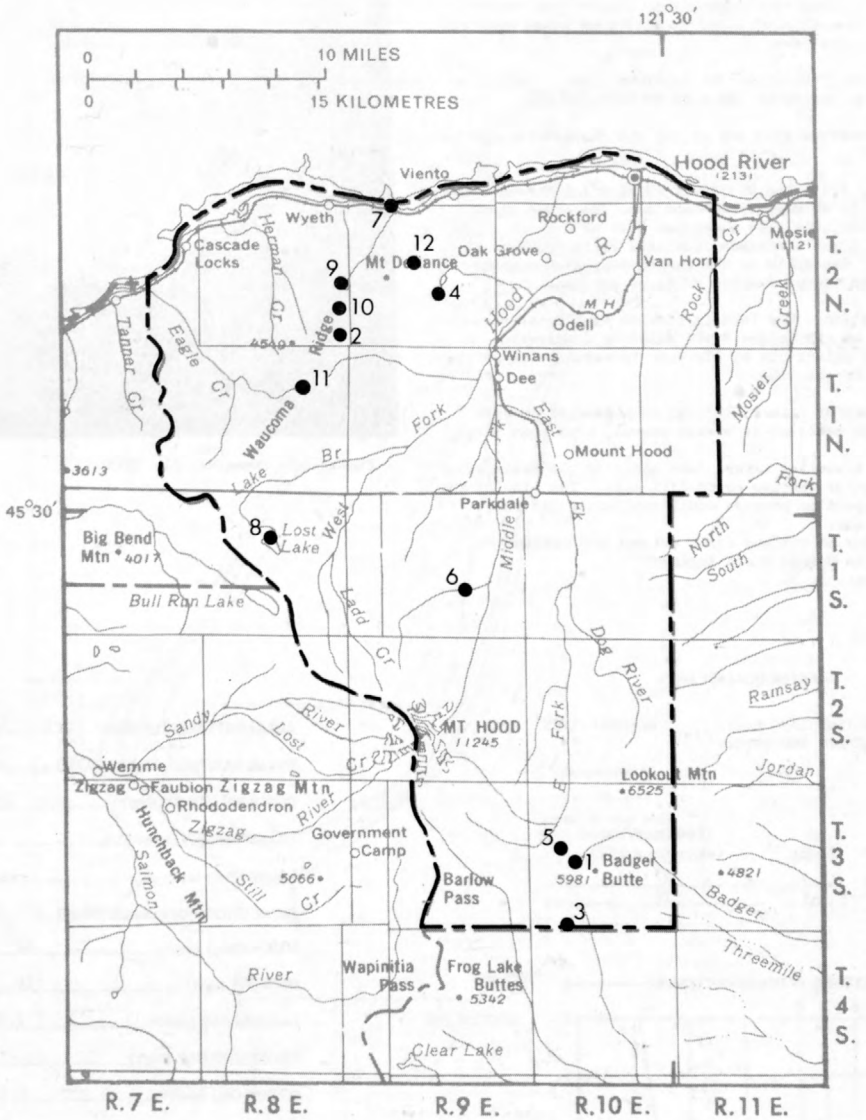


Figure 4.—Locations and identification numbers of lakes in Hood River County.

LOCATION: Secs.16, 20, and 21, T.3 S., R.10 E., about 3 mi (5 km) south of Robinhood Guard Station and 9 mi (14 km) east of Government Camp in the Mount Hood National Forest. Surface-water outlet at lat 45°18'11", long 121°33'31". Badger Lake 7½-minute quadrangle map.

DRAINAGE BASIN: Deschutes River (Lower Columbia River).

DRAINAGE AREA: 1.27 mi^2 (3.29 km^2).

SURFACE AREA: 45 acres (182,000 m^2) at spillway crest.

SURFACE ELEVATION: 4,472 ft (1,363 m) above mean sea level at spillway crest, from topographic map. Staff-gage readings indicated at elevation of 4,463 ft (1,360 m) above mean sea level on the survey date.

VOLUME: 600 acre-ft (740,000 m^3) at spillway crest. Volume on the survey date was about 220 acre-ft (270,000 m^3).

INFLOW: No flow observed from any of the six channels around the lake.

OUTFLOW: Estimated less than 0.5 ft^3/s (0.01 m^3/s) through flume about 200 ft (61 m) downstream from dam. Recorded flume measurements for 1968 show a maximum flow of 8 ft^3/s (0.23 m^3/s) on July 9 and a minimum flow of 2 ft^3/s (0.06 m^3/s) September 18. Generally by the end of September minimum pool is reached and no further releases are made.

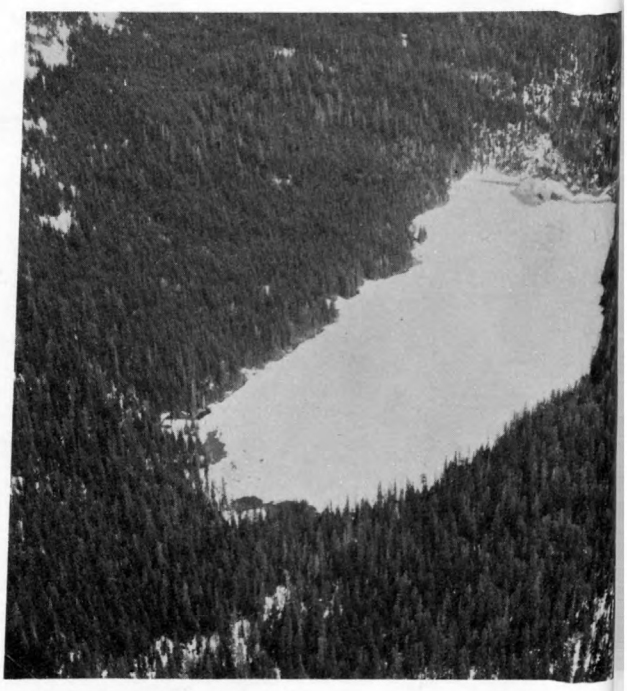
USE: Public recreation. The lake is stocked with legal-sized rainbow trout by the Oregon State Wildlife Commission. A forest camp is maintained by the U.S. Forest Service on the northeast end of the lake.

REMARKS: No evidence of either floating or submerged aquatic growth. Bottom material is mostly gravel, with some large boulders.

Probably a smaller cirque lake occupied the basin prior to construction of the two earth-fill dams. The size of the lake was increased to provide additional water for downstream irrigation.

Information on surface area, volume, and bathymetry furnished by the Oregon State Engineer

References: 3, 5.

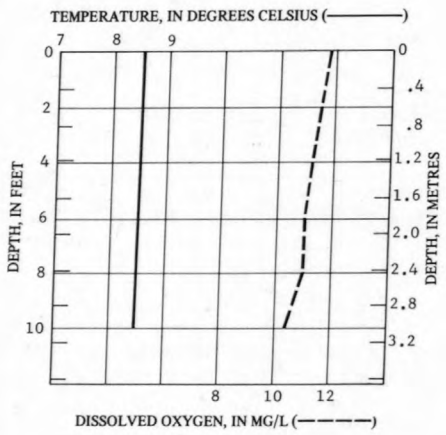


Photograph taken May 21, 1975.

WATER-QUALITY DATA

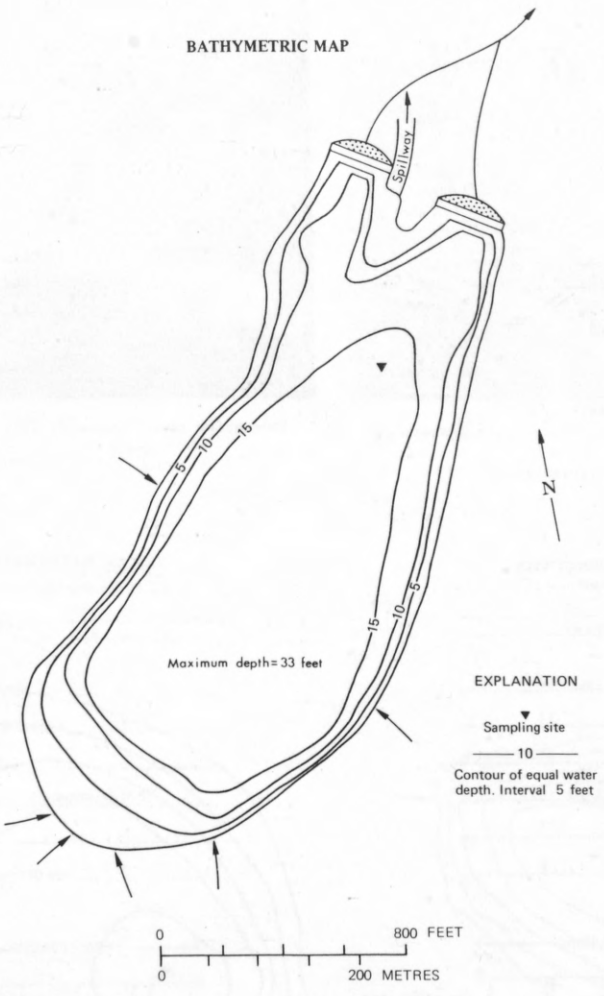
SAMPLING TIME: 1130 hours
CLOUD COVER: 100 percent

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.4	27
BOTTOM	7.2	26



ALKALINITY (mg/l as $CaCO_3$)	19
TOTAL HARDNESS (mg/l as $CaCO_3$)	10
DISSOLVED SOLIDS (mg/l)	34
TRANSPARENCY (metres)	2.4
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	0
SILICA (SiO_2) (mg/l)	16
IRON (Fe) (ug/l)	10
CALCIUM (Ca) (mg/l)	2.5
MAGNESIUM (Mg) (mg/l)	.9
SODIUM (Na) (mg/l)	1.7
POTASSIUM (K) (mg/l)	.9
BICARBONATE (HCO_3) (mg/l)	21
CARBONATE (CO_3) (mg/l)	0
SULFATE (SO_4) (mg/l)	.7
CHLORIDE (Cl) (mg/l)	.8
FLUORIDE (F) (mg/l)	0
NITRITE+NITRATE (as N) (mg/l)	0
ORTHOPHOSPHORUS (as P) (mg/l)	0

BATHYMETRIC MAP



LOCATION: Sec.36, T.2. N., R.8 E., about 5 mi (8 km) south of Wyeth and 13 mi (21 km) southwest of Hood River in the Mount Hood National Forest. Surface-water outlet at lat 45°36'57", long 121°45'35". Bonneville Dam 15-minute quadrangle map.

DRAINAGE BASIN: Hood River (Lower Columbia River).

DRAINAGE AREA: 0.17 mi^2 (0.44 km^2).

SURFACE AREA: 7 acres (28,000 m^2).

SURFACE ELEVATION: 3,800 ft (1,160 m) above mean sea level, from topographic map. High-water marks indicate seasonal range of about 1 ft (0.3 m).

VOLUME: 15 acre-ft (18,500 m^3).

INFLOW: No channels observed and none indicated on topographic map. There are several contributing springs on the west side of lake.

OUTFLOW: Estimated less than 0.1 ft^3/s (0.003 m^3/s) through small dam on northeast side of lake.

USE: Public recreation. The lake is stocked with fingerling Eastern brook trout by the Oregon State Wildlife Commission.

REMARKS: No evidence of either floating or submerged aquatic growth. Bottom material is mostly unconsolidated silt.

The lake occupies a shallow depression in an otherwise heavily forested area. A small dam of earth and rock was built at the outlet many years ago.

Not shown on the quadrangle map is an improved gravel road from Dee to the lake.

References: 3, 5, 11.

Photograph taken August 2, 1974.

WATER-QUALITY DATA

SAMPLING TIME: 1500 hours
CLOUD COVER: 50 percent - variable

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.4	27
BOTTOM	7.3	27

ALKALINITY (mg/l as $CaCO_3$) 15

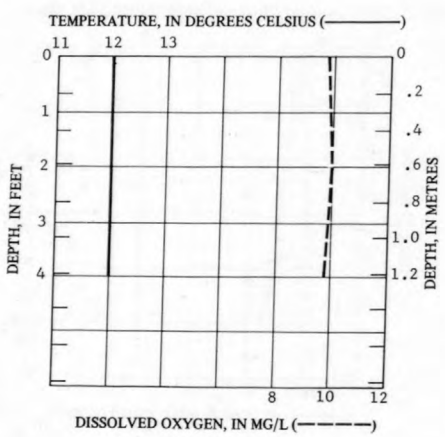
TOTAL HARDNESS (mg/l as $CaCO_3$) 11

DISSOLVED SOLIDS (mg/l) 21

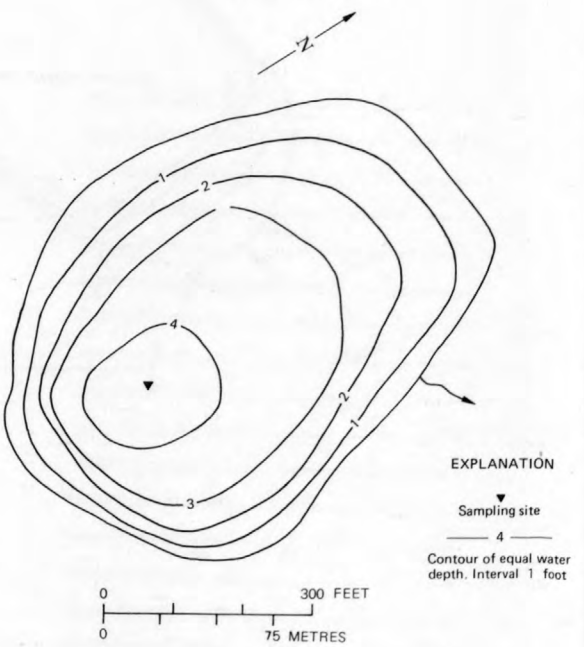
TRANSPARENCY (metres) (bottom) 1.2

COLOR (Pt-Co units) 5

FECAL COLIFORM (colonies/100 ml) 0



BATHYMETRIC MAP



LOCATION: Sec.32, T.3 S., R.10 E., and sec.5, T.4 S., R.10 E., on the Hood River-Wasco County line about 10 mi (16 km) southeast of Government Camp in the Mount Hood National Forest. Surface-water outlet at lat 45°15'26", long 121°33'54". Badger Lake 7½-minute quadrangle map.

DRAINAGE BASIN: Deschutes River (Lower Columbia River).

DRAINAGE AREA: 0.19 mi^2 (0.49 km^2).

SURFACE AREA: 14 acres (56,700 m^2).

SURFACE ELEVATION: 4,550 ft (1,390 m) above mean sea level, from topographic map.

VOLUME: 160 acre-ft (197,000 m^3).

INFLOW: No flow observed from channel on northwest side of lake. There are several contributing springs on west side of lake.

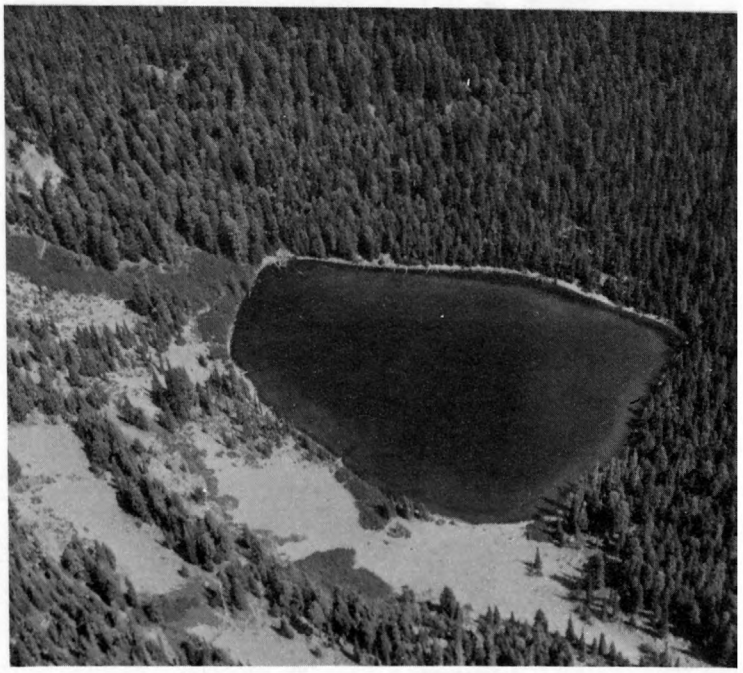
OUTFLOW: No flow to Boulder Creek on east side of lake. There is a control gate on the outflow about 50 ft (15 m) east of lake.

USE: Public recreation. The lake is stocked with fingerling Eastern brook trout by the Oregon State Wildlife Commission. The U.S. Forest Service maintains several trails to the lake.

REMARKS: No evidence of floating aquatic growth, although some attached vegetation occurs at places along the bottom. Bottom material is mostly unconsolidated silt.

The lake occupies a depression at the foot of some steep talus slopes.

References: 3, 5.



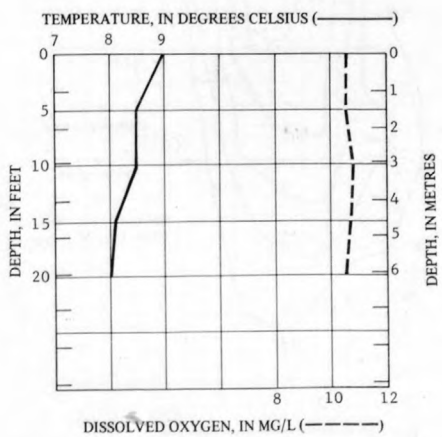
Photograph taken August 2, 1974.

WATER-QUALITY DATA

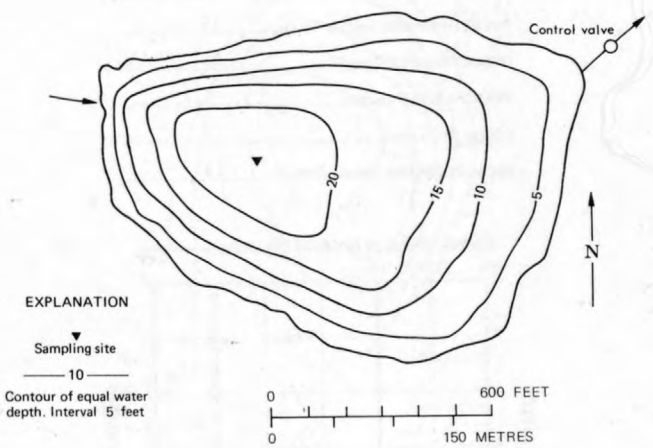
SAMPLING TIME: 1215 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.8	15
BOTTOM	7.7	14

ALKALINITY (mg/l as $CaCO_3$)	7
TOTAL HARDNESS (mg/l as $CaCO_3$)	4
DISSOLVED SOLIDS (mg/l)	18
TRANSPARENCY (metres)	(bottom) 6.1
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	0



BATHYMETRIC MAP



LOCATION: Sec.22, T.2 N., R.9 E., about 4.5 mi (7 km) northwest of Dee and 9 mi (14.5 km) southwest of Hood River. Surface-water outlet at lat 45°38'29", long 121°40'29". Hood River 15-minute quadrangle map.

DRAINAGE BASIN: Hood River (Lower Columbia River).

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 48 acres (194,000 m^2) at normal pool.

SURFACE ELEVATION: 3,175 ft (968 m) above mean sea level at normal pool and about 3,155 ft (962 m) on the survey date.

VOLUME: 670 acre-ft (826,000 m^3) at normal pool.

INFLOW: No flow observed in channel on south end of lake.

OUTFLOW: Through dam on north end of lake to Green Point Lower Reservoir. Estimated 5 ft^3/s (0.14 m^3/s) about 200 ft (61 m) downstream from lower dam.

USE: Public recreation. The reservoir is stocked with legal-sized rainbow trout by the Oregon State Wildlife Commission. A forest camp is maintained by the U.S. Forest Service on the east side of reservoir.

REMARKS: No evidence of aquatic growth. Bottom material is mostly red clay with rocks and boulders interspersed.

Green Point Lower Reservoir had been drained prior to the survey date. At an elevation of 3,130 ft (954 m) above mean sea level it covers 16 acres (65,000 m^2) and has a storage capacity of 180 acre-ft (222,000 m^3). The Hood River Irrigation District is planning a larger reservoir that will encompass the two present ones, which also are referred to as Upper and Lower Kingsley Reservoirs.

Water-rights permit issued for storage of 1,300 acre-ft (1,600,000 m^3) for irrigation.

Information on surface area, elevation, and volume furnished by the Oregon State Engineer.

References: 5.

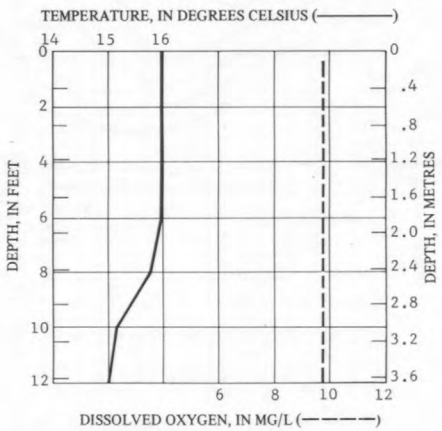
Photograph taken May 21, 1975.

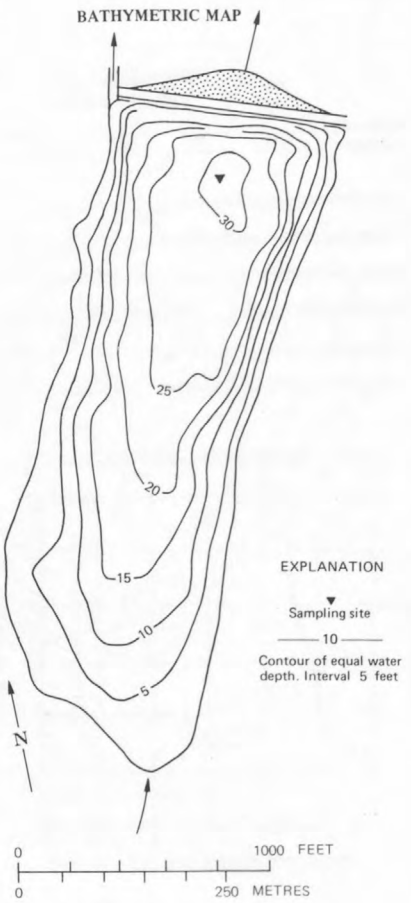
WATER-QUALITY DATA

SAMPLING TIME: 1500 hours
CLOUD COVER: 10 percent

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.3	26
BOTTOM	7.2	26

ALKALINITY (mg/l as $CaCO_3$)	15
TOTAL HARDNESS (mg/l as $CaCO_3$)	10
DISSOLVED SOLIDS (mg/l)	28
TRANSPARENCY (metres)	3.3
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	0





LOCATION: Sec.17, T.3 S., R.10 E., about 2 mi (3 km) south of Robinhood Guard Station and 9.5 mi (15 km) east of Government Camp in the Mount Hood National Forest. Surface-water outlet at lat 45°18'34", long 121°33'55". Badger Lake 7½-minute quadrangle map.

DRAINAGE BASIN: Deschutes River (Lower Columbia River).

DRAINAGE AREA: 0.11 mi^2 (0.28 km^2).

SURFACE AREA: 5 acres (20,000 m^2).

SURFACE ELEVATION: 5,300 ft (1,615 m) above mean sea level, from topographic map.

VOLUME: 50 acre-ft (62,000 m^3).

INFLOW: Estimated 0.2 ft^3/s (0.006 m^3/s) from channel on west side of lake. Source of water is spring approximately 1,000 ft (305 m) west of lake. Several other springs around perimeter also contribute, but to a lesser extent.

OUTFLOW: Estimated 0.3 ft^3/s (0.008 m^3/s) through channel on northeast side of lake.

USE: Public recreation. The lake is stocked with fingerling Eastern brook trout by the Oregon State Wildlife Commission. A forest camp is maintained by the U.S. Forest Service on the west side of lake.

REMARKS: No evidence of floating aquatic growth, although some attached vegetation occurs at places along the bottom. Bottom material is mostly unconsolidated silt. The high dissolved-solids value here is probably due to a large amount of nonionized silica in solution. (See Badger Lake chemical analysis, p.22

References: 3, 5.

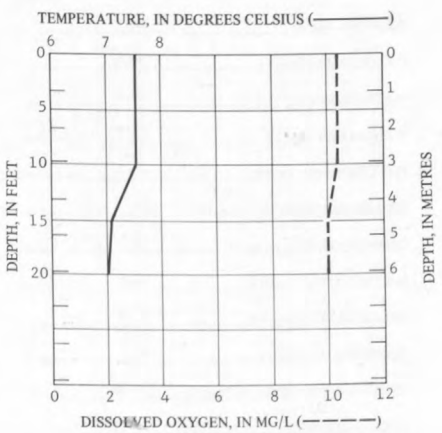
Photograph taken May 21, 1975.

WATER-QUALITY DATA

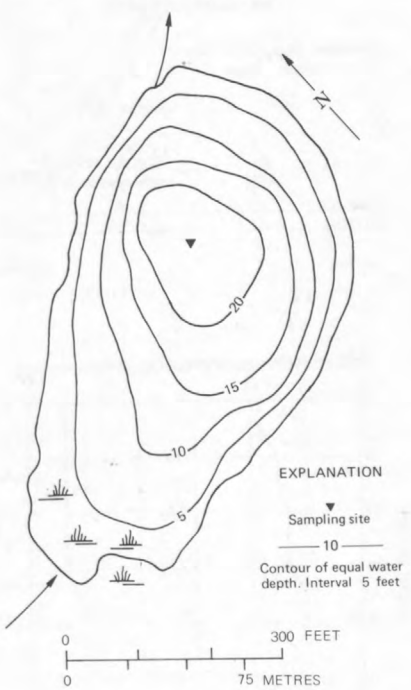
SAMPLING TIME: 1345 hours
CLOUD COVER: 80 percent - variable

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.6	23
BOTTOM	7.7	23

ALKALINITY (mg/l as $CaCO_3$)	15
TOTAL HARDNESS (mg/l as $CaCO_3$)	8
DISSOLVED SOLIDS (mg/l)	28
TRANSPARENCY (metres)	(bottom) 8.2
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	0



BATHYMETRIC MAP



LOCATION: Secs.21, 22, 27, and 28, T.1 S., R.9 E., about 5 mi (8 km) southwest of Parkdale and 6 mi (9.5 km) north of Mount Hood in the Mount Hood National Forest. Surface-water outlet at lat 45°27'40", long 121°39'20". Cathedral Ridge 7½-minute quadrangle map (not shown on map).

DRAINAGE BASIN: Hood River (Lower Columbia River).

DRAINAGE AREA: 8.55 mi^2 (22.1 km^2).

SURFACE AREA: 125 acres (506,000 m^2) at maximum pool.

SURFACE ELEVATION: 2,980 ft (908 m) above mean sea level at maximum pool. Staff-gage reading indicated an elevation of 2,948 ft (899 m) above mean sea level on the survey date.

VOLUME: 3,550 acre-ft (4.4 hm^3) at maximum pool. Volume was about 980 acre-ft (1.2 hm^3) on the survey date.

INFLOW: Estimated 9 ft^3/s (0.25 m^3/s) from Clear Branch on west side of lake and 20 ft^3/s (0.57 m^3/s) from Pinnacle Creek on south side of lake.

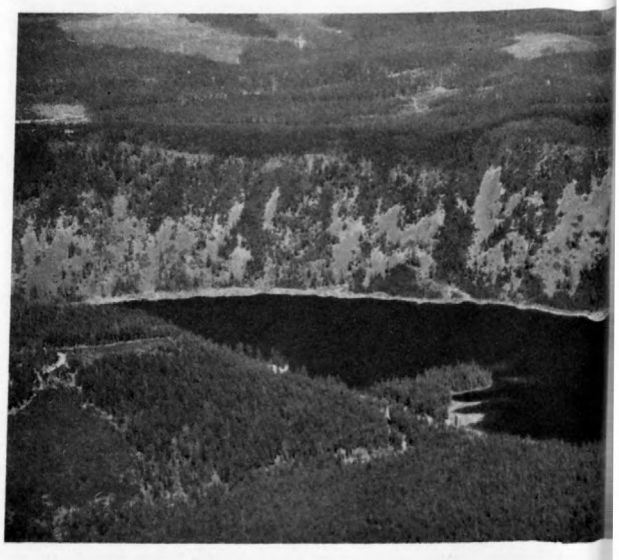
OUTFLOW: Estimated 4 ft^3/s (0.11 m^3/s) in Clear Branch about 400 ft (122 m) downstream from dam.

USE: Public recreation. The Oregon State Wildlife Commission is using the reservoir for experimental steelhead rearing. A forest camp is maintained by the Forest Service on the peninsula on south side of lake. Use of motors is prohibited.

REMARKS: No evidence of either floating or submerged aquatic growth. Also referred to as Clear Branch Reservoir.

Water-rights permit issued for storage of 2,650 acre-ft (3.3 hm^3) for irrigation, 150 acre-ft (185,000 m^3) for fish culture, and 750 acre-ft (925,000 m^3) for combined use.

Information on surface area, elevation, and volume furnished by the Oregon State Engineer.

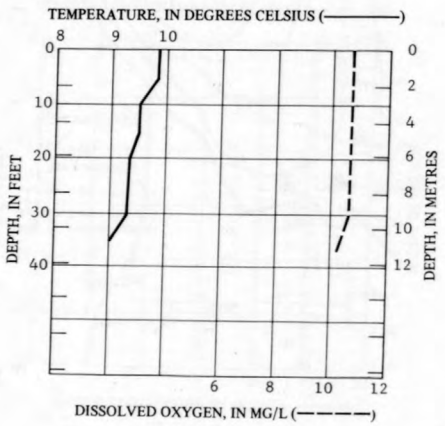


Photograph taken August 2, 1974.

WATER-QUALITY DATA

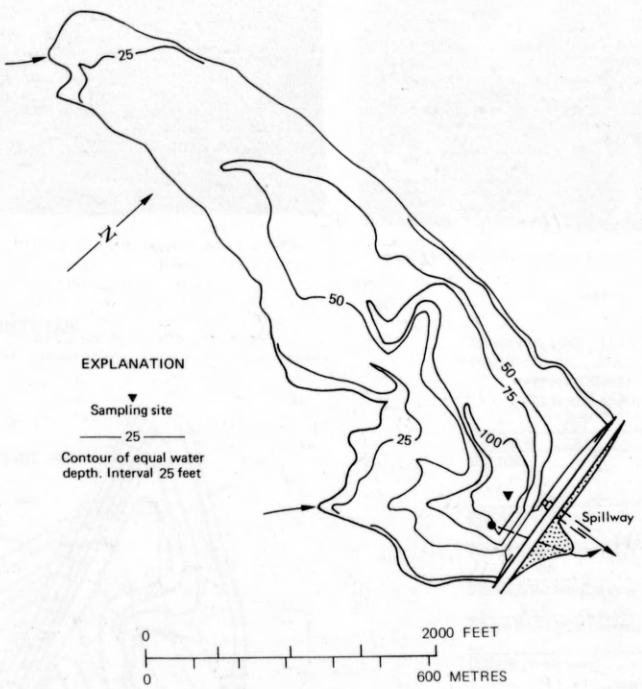
SAMPLING TIME: 1430 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.4	43
BOTTOM	7.5	42



ALKALINITY (mg/1 as $CaCO_3$)	33
TOTAL HARDNESS (mg/1 as $CaCO_3$)	13
DISSOLVED SOLIDS (mg/1)	54
TRANSPARENCY (metres)	4.0
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	0
SILICA (SiO_2) (mg/1)	27
IRON (Fe) (ug/1)	50
CALCIUM (Ca) (mg/1)	3.1
MAGNESIUM (Mg) (mg/1)	1.3
SODIUM (Na) (mg/1)	3.7
POTASSIUM (K) (mg/1)	1.4
BICARBONATE (HCO_3) (mg/1)	29
CARBONATE (CO_3) (mg/1)	0
SULFATE (SO_4) (mg/1)	2.1
CHLORIDE (Cl) (mg/1)	1.0
FLUORIDE (F) (mg/1)	0
NITRITE+NITRATE (as N) (mg/1)	.01
ORTHOPHOSPHORUS (as P) (mg/1)	.01

BATHYMETRIC MAP



LOCATION: Secs.4 and 5, T.2 N., R.9 E., near Lindsey Creek State Park about 9 mi (14.5 km) west of Hood River. Surface-water outlet at lat 45°41'21", long 121°42'19". Hood River 15-minute quadrangle map (not shown on map).

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 35 acres (142,000 m^2).

SURFACE ELEVATION: 72 ft (22 m) above mean sea level, from topographic map. This is the normal pool elevation of Columbia River water impounded by Bonneville Dam.

VOLUME: 240 acre-ft (296,000 m^3).

INFLOW: Estimated 8 ft^3/s (0.23 m^3/s) from Lindsey Creek on southwest side of lake.

OUTFLOW: Large culvert through railroad fill on north side of lake to the Columbia River. Water can flow either into or out of the lake depending on river stage and lake level.

USE: Public recreation. Fish from the Columbia River enter the lake through the outlet culvert.

REMARKS: No evidence of floating aquatic growth, although there is considerable submerged vegetation on the west end of lake. Bottom material is mostly sand and gravel.

The lake is separated from the Columbia River by a railroad fill which forms its northern boundary.

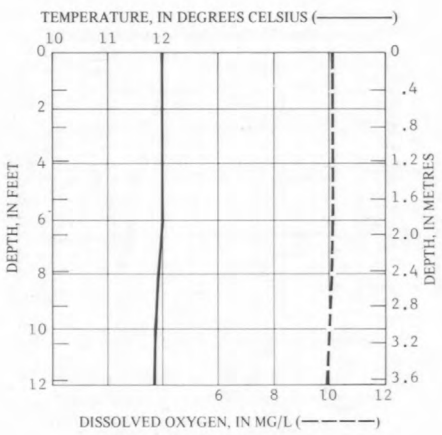
Photograph taken April 21, 1975.

WATER-QUALITY DATA

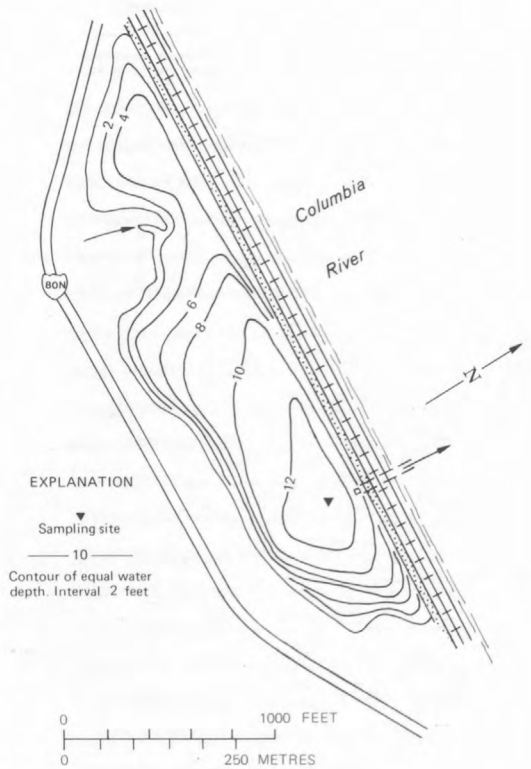
SAMPLING TIME: 1200 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.5	105
BOTTOM	7.9	102

ALKALINITY (mg/l as $CaCO_3$)	43
TOTAL HARDNESS (mg/l as $CaCO_3$)	51
DISSOLVED SOLIDS (mg/l)	80
TRANSPARENCY (metres)	1.5
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	0



BATHYMETRIC MAP



LOCATION: Secs. 9, 10, 15, and 16, T.1 S., R.8 E., about 10 mi (16 km) northwest of Mount Hood and 11 mi (18 km) west of Parkdale in the Mount Hood National Forest. Surface-water outlet at lat 45°29'49", long 121°49'05". Bull Run Lake 7½-minute quadrangle map.

DRAINAGE BASIN: Hood River (Lower Columbia River).

DRAINAGE AREA: 2.47 mi^2 (6.40 km^2).

SURFACE AREA: 230 acres (930,000 m^2).

SURFACE ELEVATION: 3,143 ft (958 m) above mean sea level, from topographic map.

VOLUME: 18,000 acre/ft (22 hm^3).

INFLOW: Estimated 2 ft^3/s (0.06 m^3/s) from Inlet Creek on west side of lake. Numerous springs on the east and west sides also contribute to the lake.

OUTFLOW: Estimated 3 ft^3/s (0.08 m^3/s) through outlet to Lake Branch on north end of lake.

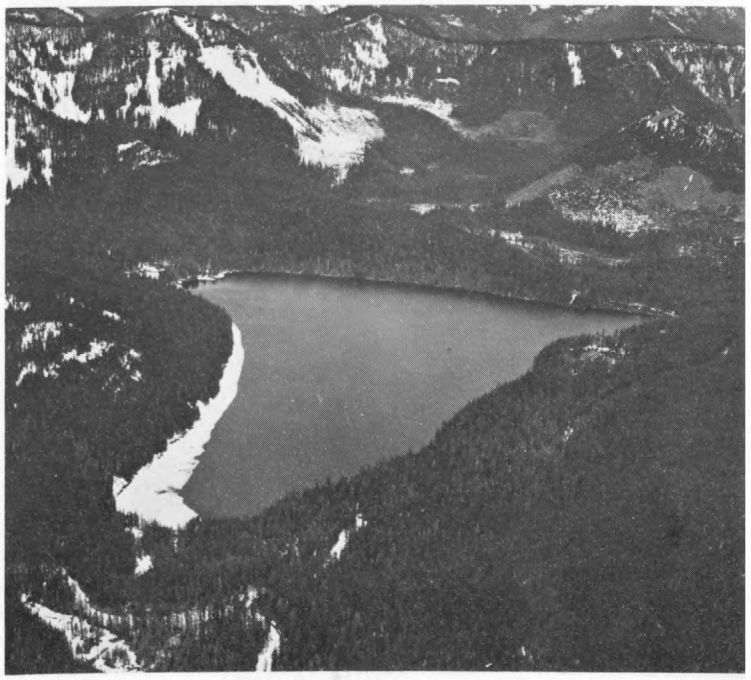
USE: Public recreation. The lake is stocked with legal-sized rainbow trout by the Oregon State Wildlife Commission. Other fish species, including Kokanee salmon, Eastern brook trout, and brown trout have been stocked in past years. The U.S. Forest Service maintains camping facilities on the north end of lake. Cabins, boats, and supplies are available at the lake resort located near the outlet.

REMARKS: No evidence of either floating or submerged aquatic growth. Bottom material is mostly unconsolidated silt.

Lost Lake was formed at the head of a glaciated valley. Later, Lost Lake Butte was formed east of the lake, which raised the water surface and gave the lake its present configuration.

Access roads to the lake are generally open from June through October, depending on weather conditions.

Selected water-quality data were collected in connection with the National Eutrophication Research Program by the U.S. Environmental Protection Agency on July 29, 1971. Dissolved-oxygen and temperature data from that date are shown below.



Photograph taken May 21, 1975.

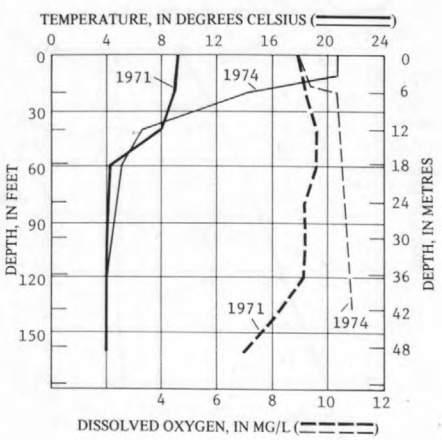
BATHYMETRIC MAP

WATER-QUALITY DATA

SAMPLING TIME: 1130 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	6.6	10
BOTTOM	6.6	10

ALKALINITY (mg/1 as $CaCO_3$)	8
TOTAL HARDNESS (mg/1 as $CaCO_3$)	4
DISSOLVED SOLIDS (mg/1)	14
TRANSPARENCY (metres)	12.2
COLOR (Pt-Co units)	0
FECAL COLIFORM (colonies/100 ml)	0



LOCATION: Sec.24, T.2 N., R.8 E., about 3.5 mi (5.5 km) south of Wyeth and 9 mi (14.5 km) east of Bonneville Dam in the Mount Hood National Forest. Surface-water outlet at lat 45°38'34", long 121°45'20". Bonneville Dam 15-minute quadrangle map.

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: 0.17 mi^2 (0.44 km^2).

SURFACE AREA: 8 acres (32,000 m^2).

SURFACE ELEVATION: 4,050 ft (1,230 m) above mean sea level, from topographic map.

VOLUME: 20 acre-ft (25,000 m^3).

INFLOW: Estimated a total of 0.4 ft^3/s (0.01 m^3/s) through marsh on southwest side of lake.

OUTFLOW: Estimated less than 0.5 ft^3/s (0.01 m^3/s) through small boulder dam on northeast side of lake.

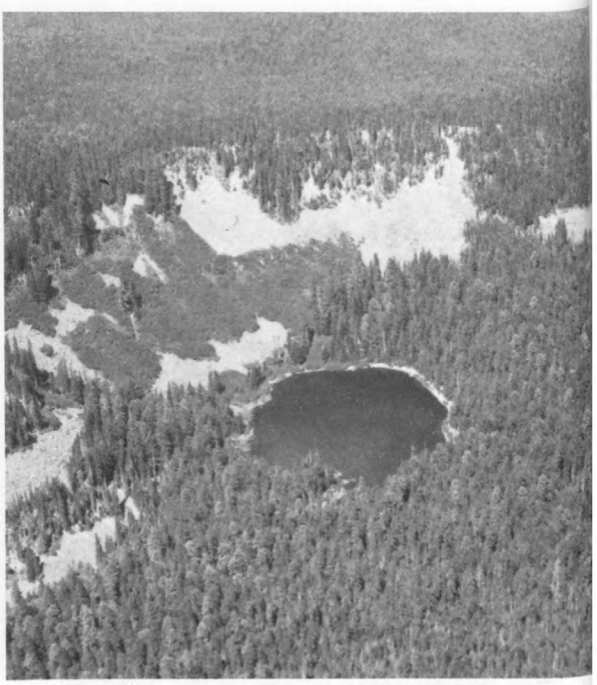
USE: Public recreation. The lake is stocked with fingerling Eastern brook trout by the Oregon State Wildlife Commission. Trails to the lake are maintained by the U.S. Forest Service.

REMARKS: No evidence of either floating or submerged aquatic growth. Bottom material is mostly unconsolidated silt.

The lake occupies a depression at the foot of some steep talus slopes.

Lake accessible by an improved gravel road from Dee, not shown on the quadrangle map.

References: 3, 5, 11.



Photograph taken August 2, 1974.

WATER-QUALITY DATA

SAMPLING TIME: 1330 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.2	23
BOTTOM	7.3	24

ALKALINITY (mg/l as $CaCO_3$) 16

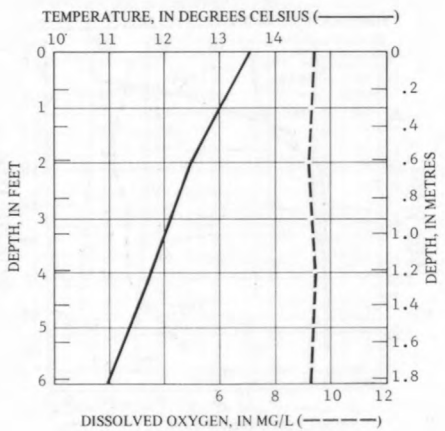
TOTAL HARDNESS (mg/l as $CaCO_3$) 10

DISSOLVED SOLIDS (mg/l) 20

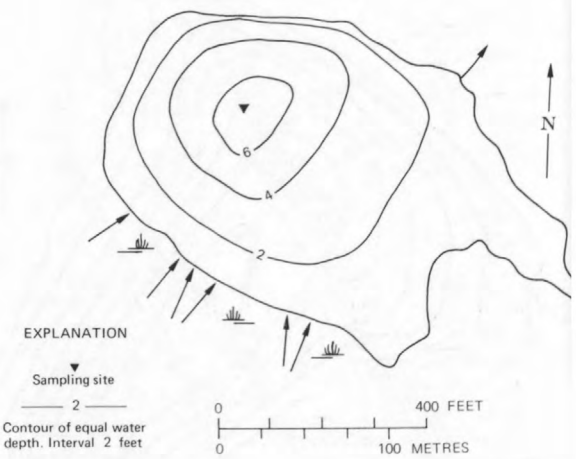
TRANSPARENCY (metres) (bottom) 1.8

COLOR (Pt-Co units) 5

FECAL COLIFORM (colonies/100 ml) 0



BATHYMETRIC MAP



LOCATION: Sec.25, T.2 N., R.8 E., about 4.5 mi (7 km) south of Wyeth and 9 mi (14.5 km) east of Bonneville Dam in the Mount Hood National Forest. Surface-water outlet at lat 45°37'40", long 121°45'34". Bonneville Dam 15-minute quadrangle map.

DRAINAGE BASIN: Hood River (Lower Columbia River).

DRAINAGE AREA: 0.16 mi^2 (0.41 km^2).

SURFACE AREA: 8 acres (32,000 m^2).

SURFACE ELEVATION: 4,100 ft (1,250 m) above mean sea level, from topographic map.

VOLUME: 20 acre-ft (25,000 m^3).

INFLOW: No channels observed. There are several contributing springs on the north and west sides of lake.

OUTFLOW: Estimated 0.1 ft^3/s (0.003 m^3/s) through boulder dam on northeast side of lake.

USE: Public recreation. The lake is stocked with Eastern brook trout by the Oregon State Wildlife Commission. The trails and forest camp east of the lake are maintained by the U.S. Forest Service.

REMARKS: No evidence of either floating or submerged aquatic growth. Bottom material is mostly unconsolidated silt.

The lake occupies a depression at the foot of steep talus slopes. This lake was probably formed in the same way as nearby North (p. 22) and Black (p.14) Lakes. A small dam of earth and rock was built at the outlet many years ago, perhaps as a splash dam.

There is now an improved gravel road from Dee to the lake that is not shown on the quadrangle map.

References: 3, 5, 11.

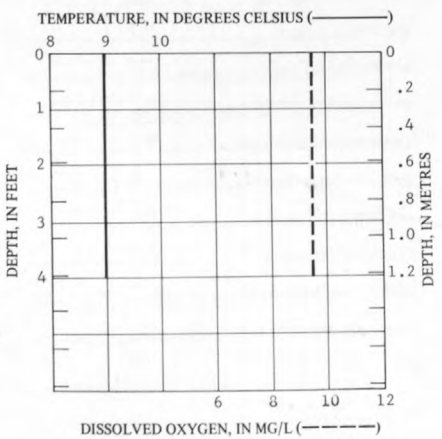
Photograph taken August 2, 1974.

WATER-QUALITY DATA

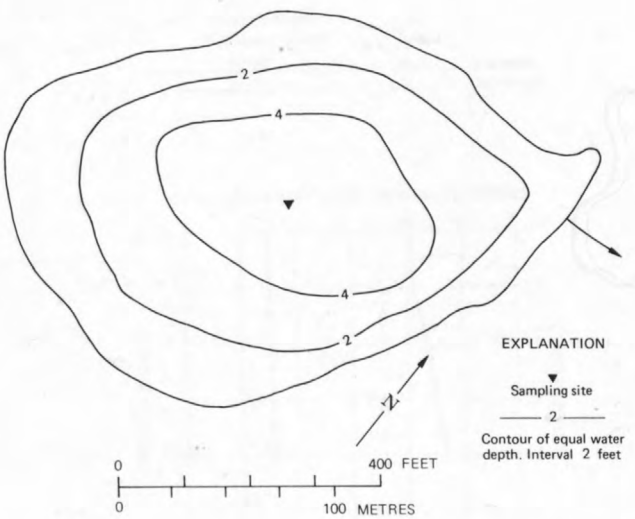
SAMPLING TIME: 1300 hours
CLOUD COVER: 70 percent

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.6	36
BOTTOM	7.6	36

ALKALINITY (mg/l as $CaCO_3$)	23
TOTAL HARDNESS (mg/l as $CaCO_3$)	14
DISSOLVED SOLIDS (mg/l)	27
TRANSPARENCY (metres)	(bottom) 1.2
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	0



BATHYMETRIC MAP



LOCATION: Secs.10 and 11, T.1 N., R.8 E., about 7.5 mi (12 km) south of Wyeth and 8 mi (13 km) southwest of Bonneville Dam in the Mount Hood National Forest. Surface-water outlet at lat 45°34'52", long 121°47'58". Bonneville Dam 15-minute quadrangle map.

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: 0.71 mi^2 (1.84 km^2).

SURFACE AREA: 60 acres (240,000 m^2).

SURFACE ELEVATION: 3,732 ft (1,138 m) above mean sea level, from topographic map.

VOLUME: 3,500 acre-ft (4.3 hm^3).

INFLOW: Several unnamed intermittent streams contribute to the lake.

OUTFLOW: No measurable flow in the East Fork of Eagle Creek on west side of lake.

USE: Public recreation. The lake is stocked with Eastern brook trout by the Oregon State Wildlife Commission. There are several campsites around the lake as well as a forest camp that is reached by trail from the south. The trails and campsites are maintained by the U.S. Forest Service.

REMARKS: No evidence of floating aquatic growth, although some attached vegetation occurs at places along the bottom. Bottom material is mostly soft sand.

This is a fine example of a cirque lake, as shown by its amphitheater-shaped basin and steep surrounding walls.

The Oregon State Wildlife Commission reports a maximum depth of 184 ft (56 m) for Wahtum Lake.

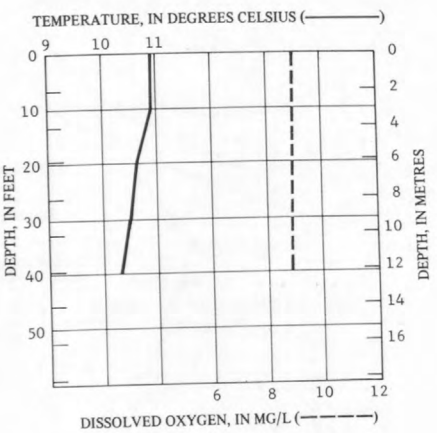
References: 3, 5, 11.

Photograph taken May 21, 1975.

WATER-QUALITY DATA

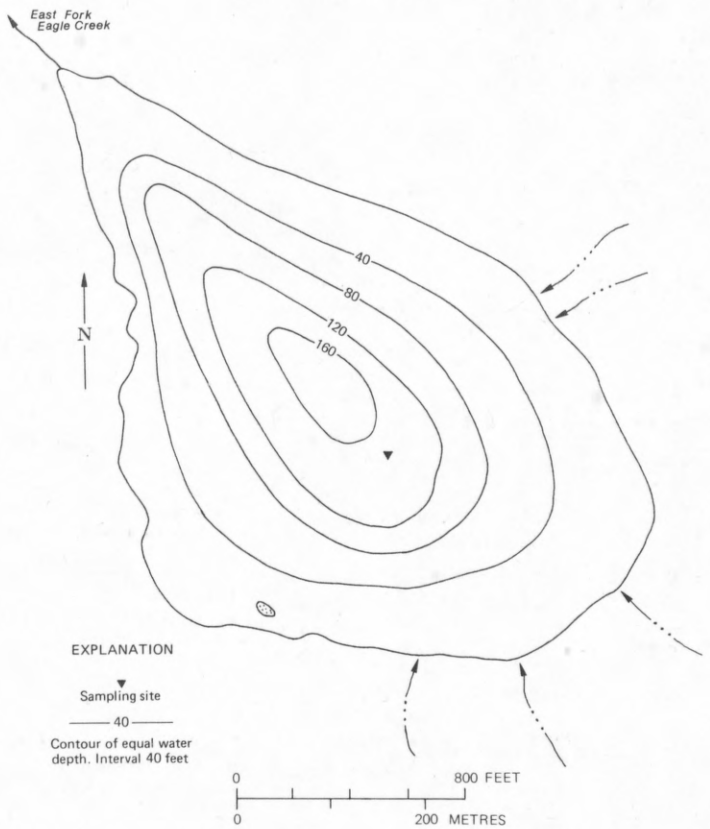
SAMPLING TIME: 1300 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY •(micromhos at 25°C)
SURFACE	6.9	15
BOTTOM	--	--



ALKALINITY (mg/1 as $CaCO_3$)	8
TOTAL HARDNESS (mg/1 as $CaCO_3$)	7
DISSOLVED SOLIDS (mg/1)	16
TRANSPARENCY (metres)	10.7
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	0
SILICA (SiO_2) (mg/1)	5.9
IRON (Fe) (ug/1)	10
CALCIUM (Ca) (mg/1)	1.3
MAGNESIUM (Mg) (mg/1)	.8
SODIUM (Na) (mg/1)	1.2
POTASSIUM (K) (mg/1)	.4
BICARBONATE (HCO_3) (mg/1)	10
CARBONATE (CO_3) (mg/1)	0
SULFATE (SO_4) (mg/1)	.9
CHLORIDE (Cl) (mg/1)	1.0
FLUORIDE (F) (mg/1)	0
NITRITE+NITRATE (as N) (mg/1)	0
ORTHOPHOSPHORUS (as P) (mg/1)	0

BATHYMETRIC MAP



LOCATION: Sec.16, T.2 N., R.9 E., about 6 mi (9.5 km) northwest of Dee and 9.5 mi (15 km) southwest of Hood River in the Mount Hood National Forest. Surface-water outlet at lat 45°39'24", long 121°42'13". Hood River 15-minute quadrangle map.

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: 0.20 mi^2 (0.52 km^2).

SURFACE AREA: 5 acres (20,000 m^2).

SURFACE ELEVATION: 3,752 ft (1,144 m) above mean sea level, from topographic map.

VOLUME: 15 acre-ft (18,000 m^3).

INFLOW: No channels observed and none indicated on topographic map.

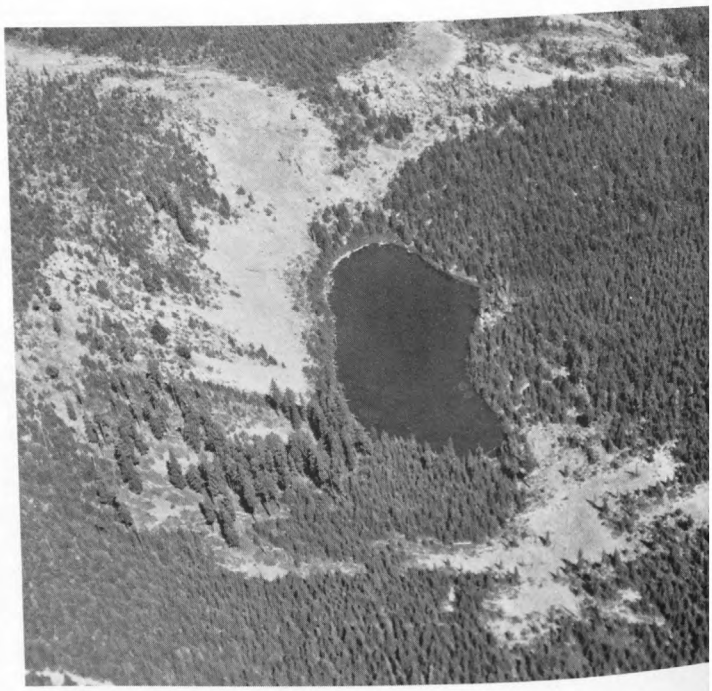
OUTFLOW: Mostly seepage to channel on northeast side of lake, with continuous flow only during high-water periods.

USE: Public recreation. The lake is stocked with fingerling Eastern brook trout by the Oregon State Wildlife Commission. Trails to the lake are maintained by the U.S. Forest Service.

REMARKS: Several pads of rooted emergent plants and a large patch of bottom vegetation were observed. Bottom material is mostly unconsolidated silt.

The lake occupies a depression at the foot of some steep talus slopes.

References: 3, 5, 11.



Photograph taken August 2, 1974.

WATER-QUALITY DATA

SAMPLING TIME: 1145 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.2	15
BOTTOM	7.2	15

ALKALINITY (mg/l as $CaCO_3$) 7

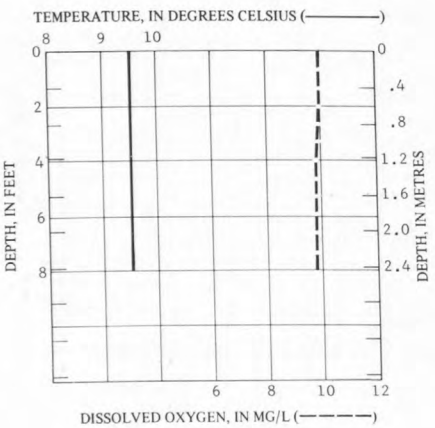
TOTAL HARDNESS (mg/l as $CaCO_3$) 3

DISSOLVED SOLIDS (mg/l) 17

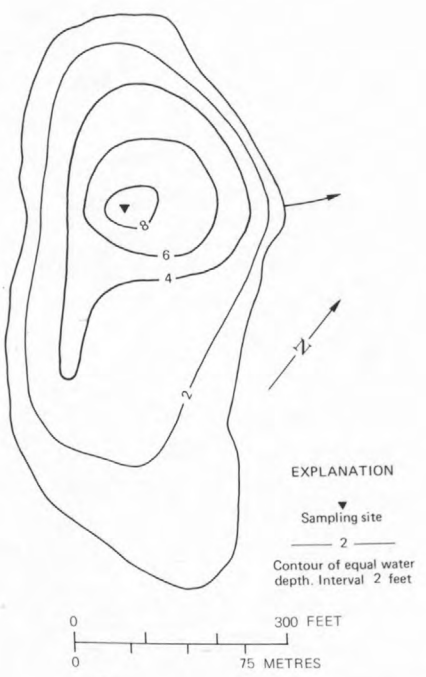
TRANSPARENCY (metres) (bottom) 2.4

COLOR (Pt-Co units) 5

FECAL COLIFORM (colonies/100 ml) 0



BATHYMETRIC MAP



Multnomah County

(2) Blue Lake

Lakes of Multnomah County

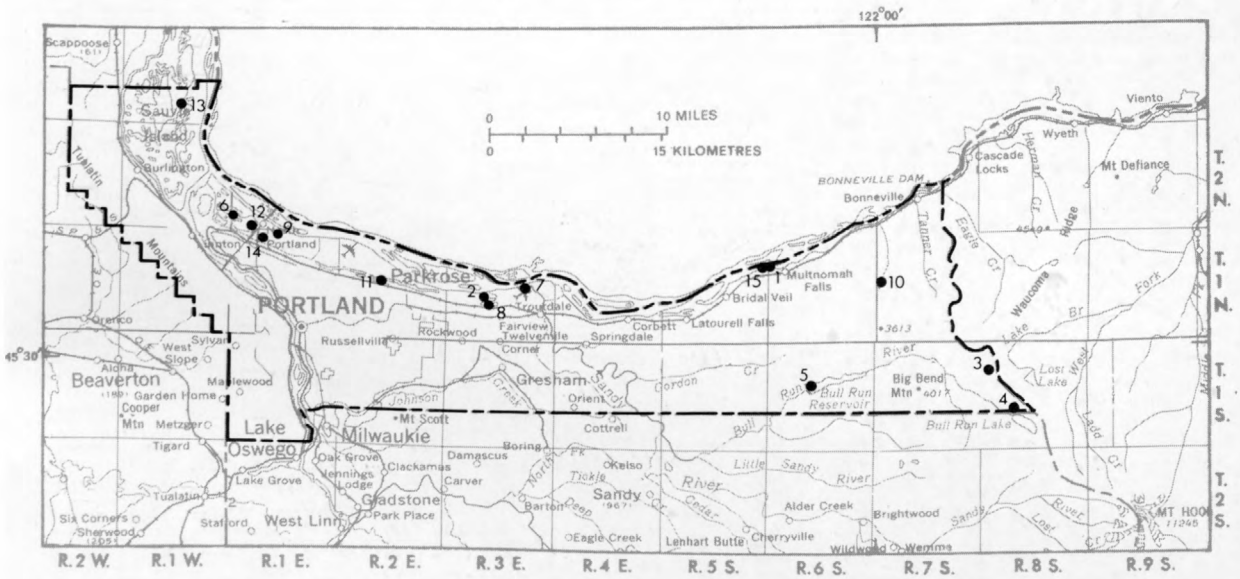


Figure 5.—Locations and identification numbers of lakes in Multnomah County.

LOCATION: Sec.12, T.1 N., R.5 E., and sec.7, T.1 N., R.6 E., adjacent to Highway 80N about 28 mi (45 km) east of Portland city center near Multnomah Falls. Surface-water outlet at lat 45°34'41", long 122°07'31". Bridal Veil 15-minute quadrangle map.

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: 4.86 mi^2 (12.6 km^2).

SURFACE AREA: 25 acres (100,000 m^2).

SURFACE ELEVATION: 30 ft (9 m) above mean sea level, from topographic map.

VOLUME: 120 acre-ft (150,000 m^3).

INFLOW: Estimated 2 ft^3/s (0.06 m^3/s) from Multnomah Creek on east end of lake.

OUTFLOW: No measurable flow through channel on west end of lake. The channel connects with Wahkeena Lake (p. 47) outflow about 600 ft (183 m) west of the lake, then flows under Highway 80N into the Columbia River.

USE: Public recreation. Benson State Park, a day-use recreational area, is located on the west end of the lake. The lake is stocked several times during the year with legal-sizes rainbow trout by the Oregon State Wildlife Commission, with native varieties entering the lake from the Columbia River. No motors are allowed on the lake.

REMARKS: There is a considerable amount of vegetation on the east end of the lake, some of it emergent. Bottom material is mostly sand.

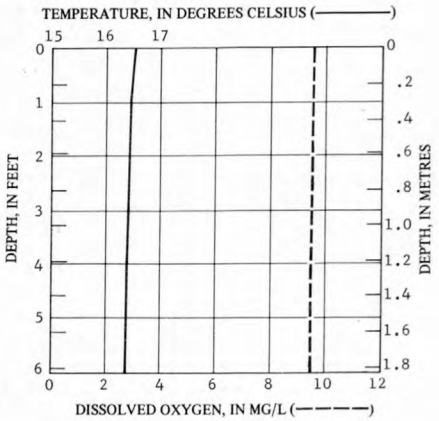
The lake was formed by backwater from Multnomah Creek after construction of Highway 80N to the north.

References: 5, 9.

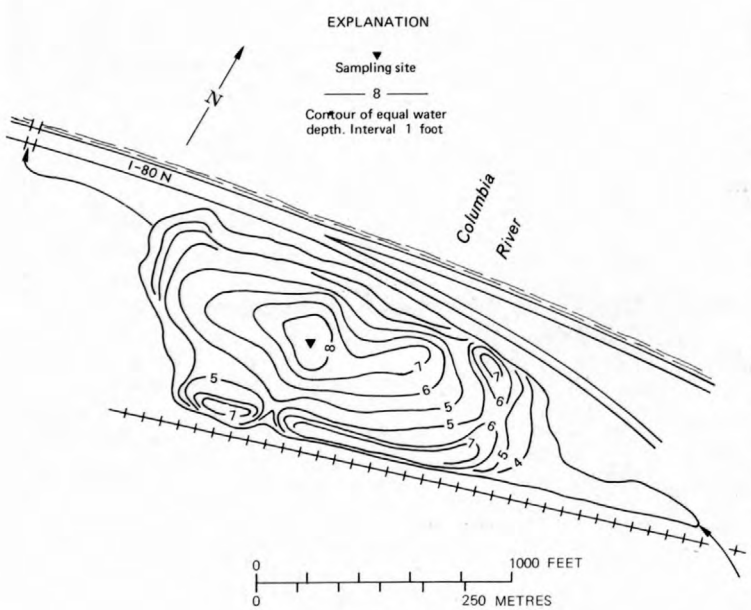
WATER-QUALITY DATA

SAMPLING TIME: 1100 hours
CLOUD COVER: 90 percent

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.9	43
BOTTOM	7.9	43



BATHYMETRIC MAP



ALKALINITY (mg/l as $CaCO_3$)	22
TOTAL HARDNESS (mg/l as $CaCO_3$)	18
DISSOLVED SOLIDS (mg/l)	37
TRANSPARENCY (metres)	.8
COLOR (Pt-Co units)	--
FECAL COLIFORM (colonies/100 ml)	--
SILICA (SiO_2) (mg/l)	13
IRON (Fe) (ug/l)	70
CALCIUM (Ca) (mg/l)	4.5
MAGNESIUM (Mg) (mg/l)	1.7
SODIUM (Na) (mg/l)	2.7
POTASSIUM (K) (mg/l)	.6
BICARBONATE (HCO_3) (mg/l)	25
CARBONATE (CO_3) (mg/l)	0
SULFATE (SO_4) (mg/l)	.5
CHLORIDE (Cl) (mg/l)	1.1
FLUORIDE (F) (mg/l)	.0
NITRITE+NITRATE (as N) (mg/l)	.03
ORTHOPHOSPHORUS (as P) (mg/l)	.00

Photograph taken April 21, 1975.

LOCATION: Secs.20 and 21, T.1 N., R.3 E., about 3 mi (5 km) northwest of Troutdale and 11.5 mi (18.5 km) east of Portland city center. Surface-water outlet at lat 45°33'14", long 122 26'19". Camas 7½-minute quadrangle map.

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 65 acres (260,000 m^2). (Information furnished by the Oregon State Wildlife Commission.)

SURFACE ELEVATION: 14 ft (4 m) above mean sea level, from topographic map. Water level is dependent on Columbia River stage.

VOLUME: 720 acre-ft (890,000 m^3). (Information furnished by the Oregon State Wildlife Commission.)

INFLOW: No channels observed, and none indicated on topographic map.

OUTFLOW: No flow observed through channel on east end of lake. There is a small concrete dam and control valve on the outflow about 500 ft (150 m) northeast of the outlet.

USE: Public and private recreation. A large county park is located on the north side of the lake. Fish species in the lake include largemouth bass, crappie, sunfish, yellow perch, and rainbow trout (McHugh, 1972).

REMARKS: Heavy growths of rooted aquatic plants and algae have plagued the lake for some time and have created esthetic and water-quality problems that could make the lake undesirable for some uses. The bottom of this lateral levee lake (cutoff river channel) is a combination of consolidated silt and organic material.

Bathymetry was furnished by the Oregon State Wildlife Commission.

References: 5, 9.

WATER-QUALITY DATA

SAMPLING TIME: 1130 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	6.9	136
BOTTOM	7.0	184

ALKALINITY (mg/1 as $CaCO_3$) 63

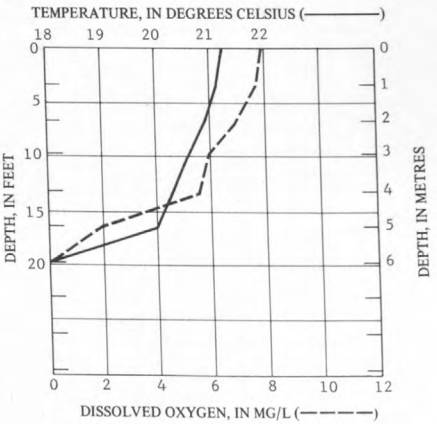
TOTAL HARDNESS (mg/1 as $CaCO_3$) 56

DISSOLVED SOLIDS (mg/1) 92

TRANSPARENCY (metres) 1.0

COLOR (Pt-Co units) 15

FECAL COLIFORM (colonies/100 ml) 1

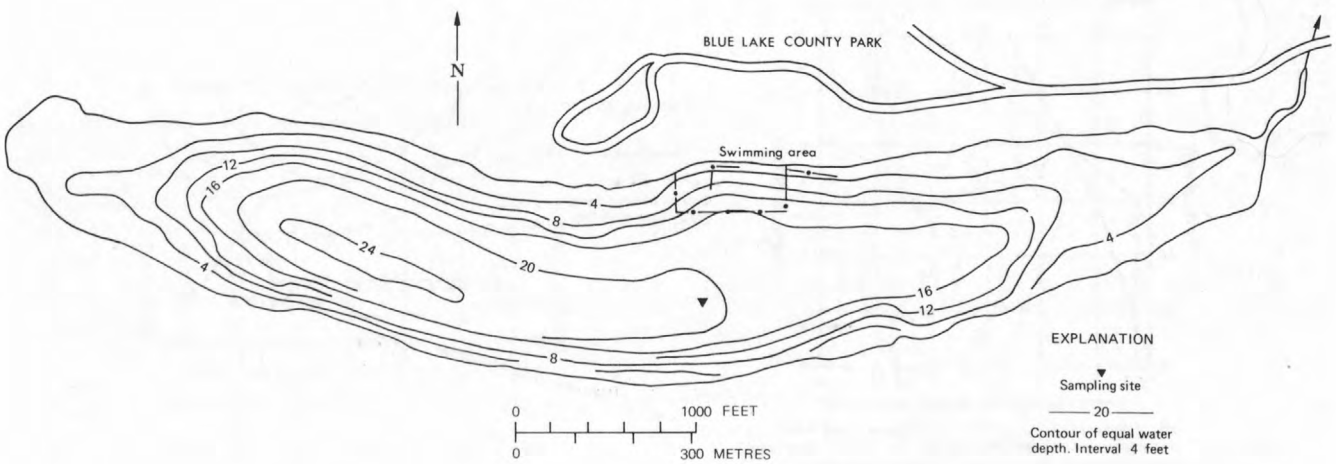


MULTNOMAH COUNTY

SURVEY DATE: September 6, 1974

Photograph taken April 21, 1975.

BATHYMETRIC MAP



LOCATION: Sec.7, T.1 S., R.8 E., about 3.5 mi (6 km) west of Lost Lake Butte and 12 mi (19 km) south of Cascade Locks in the Bull Run Reserve. Surface-water outlet at lat 45 30'05", long 121 52'07". Bull Run 7½-minute and Bonneville Dam 15-minute quadrangle maps.

DRAINAGE BASIN: Sandy River (Lower Columbia River).

DRAINAGE AREA: 0.32 mi^2 (0.83 km^2).

SURFACE AREA: 10 acres (40,000 m^2).

SURFACE ELEVATION: 3,800 ft (1,160 m) above mean sea level, from topographic map. The water surface was permanently lowered by about 20 ft (6 m) in 1964 when high water destroyed a wooden control structure on the outlet.

VOLUME: 250 acre-ft (310,000 m^3).

INFLOW: No flow observed through any of the channels around the lake on the survey date.

OUTFLOW: Estimated less than 1 ft^3/s (0.03 m^3/s) to Log Creek on north side of lake.

USE: No public recreation.

REMARKS: No evidence of either surface or submerged aquatic growth. Bottom material of this cirque lake is mostly sand and rock.

The city of Portland has exclusive rights to all waters within the Bull Run Reserve, which is closed to the general public.

References: 3, 9.

Photograph taken August 2, 1974.

WATER-QUALITY DATA

SAMPLING TIME: 1300 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	6.4*	27*
BOTTOM	5.6*	30*

ALKALINITY (mg/l as $CaCO_3$) 8

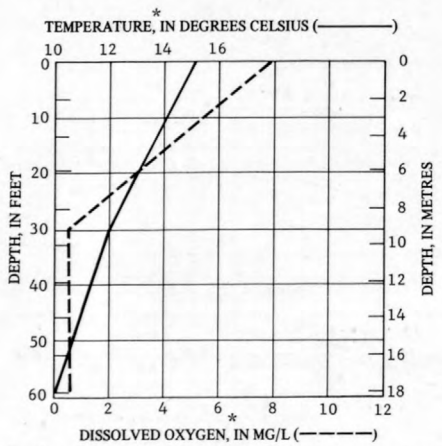
TOTAL HARDNESS (mg/l as $CaCO_3$) 7

DISSOLVED SOLIDS (mg/l) 17

TRANSPARENCY (metres) 7.6

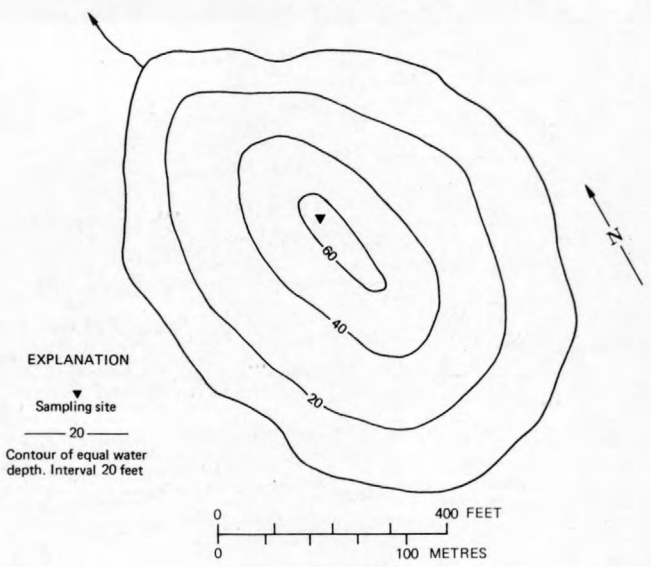
COLOR (Pt-Co units) <5

FECAL COLIFORM (colonies/100 ml) 0



* pH, conductivity, dissolved oxygen, and temperature data from September 12, 1967, sampling by the Oregon Department of Environmental Quality.

BATHYMETRIC MAP



LOCATION: Secs.20, 21, 27, 28, 29, and 34, T.1 S., R.8 E., about 9 mi (14 km) northwest of Mount Hood, and 13 mi (21 km) southeast of Bonneville Dam in the Bull Run Reserve. Surface-water outlet at lat 45°27'39", long 121°50'41". Bull Run 7½-minute quadrangle map.

DRAINAGE BASIN: Sandy River (Lower Columbia River).

DRAINAGE AREA: 3.45 mi^2 (8.94 km^2).

SURFACE AREA: 450 acres (1.8 km^2).

SURFACE ELEVATION: 3,175 ft (968 m) above mean sea level, from topographic map.

VOLUME: 30,000 acre-ft (37 hm^3). Usable storage in the lake is 12,300 acre-ft (15 hm^3) (Willamette Basin Task Force, 1969, table I-1).

INFLOW: No flow observed in any of the nine channels around the lake.

OUTFLOW: No flow observed to Bull Run River on the northwest end of lake. There is a concrete control structure on the outlet.

USE: No public recreation.

REMARKS: No evidence of either floating or submerged aquatic growth. Bottom material is mostly sand and rock.

The lake, formed primarily by glacial scouring, serves as headwaters for Portland's water-supply system. The city of Portland has exclusive rights to all waters within the Bull Run Reserve, which is closed to the general public.

Bathymetry from Campbell (1940).

References: 3, 19.

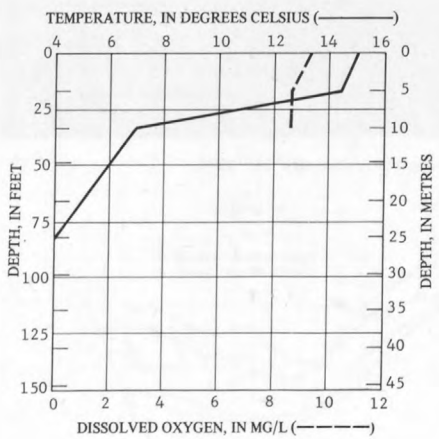
Photograph taken May 21, 1975.

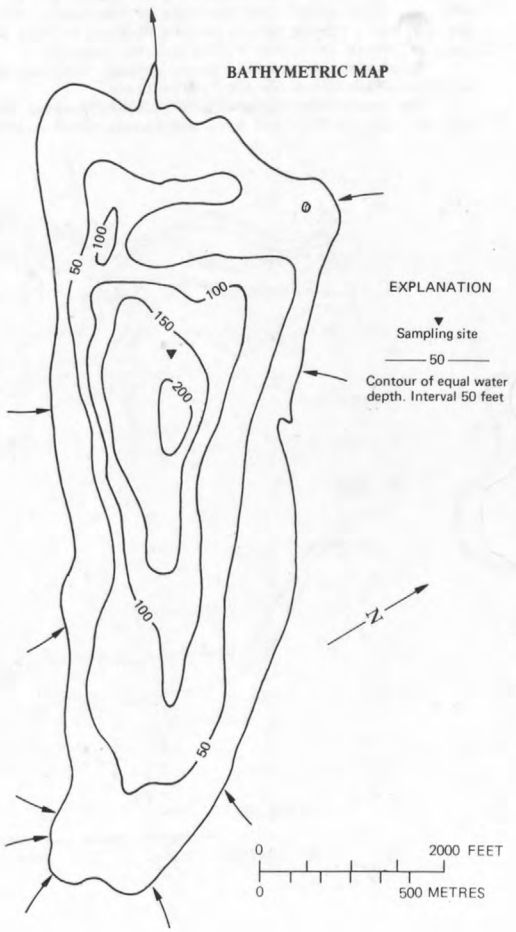
WATER-QUALITY DATA

SAMPLING TIME: 1200 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	6.9	16
BOTTOM	7.2	16

ALKALINITY (mg/l as $CaCO_3$)	8
TOTAL HARDNESS (mg/l as $CaCO_3$)	5
DISSOLVED SOLIDS (mg/l)	16
TRANSPARENCY (metres)	11.2
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	0





LOCATION: Secs.10, 11, 12, 14, 15, and 16, T.1 S., R.6 E., about 8 mi (13 km) north of Brightwood and 30 mi (48 km) east of Portland city center in the Bull Run Reserve. Surface-water outlet at lat 45°28'55", long 122°04'55". Cherryville 15-minute quadrangle map.

DRAINAGE BASIN: Sandy River (Lower Columbia River).

DRAINAGE AREA: 74.6 mi^2 (193 km^2).

SURFACE AREA: 410 acres (1.7 km^2) at the spillway crest.

SURFACE ELEVATION: 1,043 ft (318 m) above mean sea level at spillway crest. Water-surface elevation was 1,016 ft (310 m) above mean sea level on the survey date. Maximum elevation for the year was 1,046 ft (319 m) above mean sea level on June 27, and minimum elevation was 1,015 ft (309 m) above mean sea level on November 6.

VOLUME: 29,720 acre-ft (37 hm^3) at the spillway crest. Volume was 19,850 acre-ft (24 hm^3) on the survey date. Maximum volume for the year was 30,900 acre-ft (38 hm^3) on June 27 and minimum volume was 19,530 acre-ft (24 hm^3) on November 6.

INFLOW: U.S. Geological Survey discharge records for 1974 show flows of 74 ft^3/s (2.1 m^3/s) from Bull Run River and 18 ft^3/s (0.5 m^3/s) from the North Fork on the survey date. Several other streams, including Cougar Creek and Fir Creek, contribute some inflow to the reservoir.

OUTFLOW: 143 ft^3/s (4 m^3/s) through dam on west end of reservoir on the survey date.

USE: No public recreation.

REMARKS: No evidence of either floating or submerged aquatic growth.

The reservoir, also known as Lake Ben Morrow, was formed by a concrete dam completed in March 1929 to supplement the water supply for the city of Portland. Portland has exclusive rights to all waters within the Bull Run Reserve, which is closed to the general public.

Information on surface area, volume, outflow, and bathymetry furnished by city of Portland.

The Oregon State Department of Environmental Quality and the city of Portland have additional water-quality data.

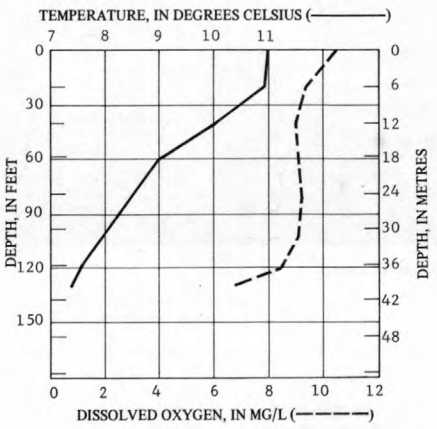
Photograph taken May 21, 1975.

WATER-QUALITY DATA
Site 1

SAMPLING TIME: 1230 hours
CLOUD COVER: 100 percent

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	6.8	27
BOTTOM	6.8	24

ALKALINITY (mg/l as $CaCO_3$) 11
TOTAL HARDNESS (mg/l as $CaCO_3$) 10
DISSOLVED SOLIDS (mg/l) 29
TRANSPARENCY (metres) 6.7
COLOR (Pt-Co units) 5
FECAL COLIFORM (colonies/100 ml) 0

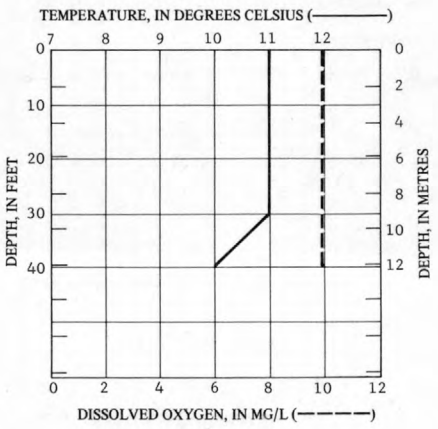


WATER-QUALITY DATA
Site 2

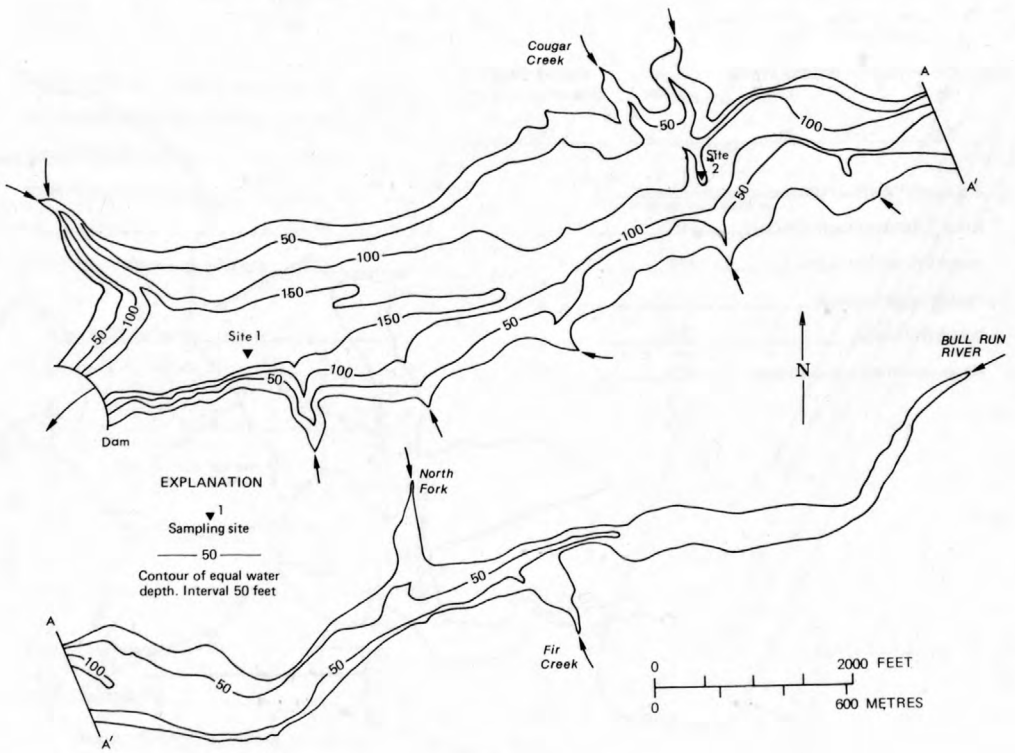
SAMPLING TIME: 1200 hours
CLOUD COVER: 100 percent

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	6.8	27
BOTTOM	6.8	30

ALKALINITY (mg/l as $CaCO_3$) 11
TOTAL HARDNESS (mg/l as $CaCO_3$) 11
DISSOLVED SOLIDS (mg/l) 25
TRANSPARENCY (metres) --
COLOR (Pt-Co units) 5
FECAL COLIFORM (colonies/100 ml) 0



BATHYMETRIC MAP



LOCATION: Secs.25 and 36, T.2 N., R.1 W., and secs.30 and 31, T.2 N., R.1 E., about 4 mi (6.5 km) west of Vancouver and 7 mi (11 km) north of Portland city center. Surface-water outlet at lat 45°36'57", long 122°44'31". Portland, Linnton, Sauvie Island, and Vancouver 7½-minute quadrangle maps.

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 250 acres (1.0 km^2).

SURFACE ELEVATION: Less than 10 ft (3 m) above mean sea level, from topographic map. Water level is dependent on Columbia River stage.

VOLUME: 250 acre-ft (300,000 m^3).

INFLOW: No channels observed, and none indicated on topographic map. During high-water periods, the lake is connected to Smith Lake (p. 44) on the southeast side of lake.

OUTFLOW: No measurable flow through channel on south side of lake. The channel drains to Columbia Slough and the Willamette River.

USE: No public recreation without permission. Most of the surrounding land is privately owned.

REMARKS: This large, shallow lake often floods surrounding areas during periods of high water, yet it can also dry up during extremely dry periods when the Columbia River is low.

Photograph taken April 21, 1975.

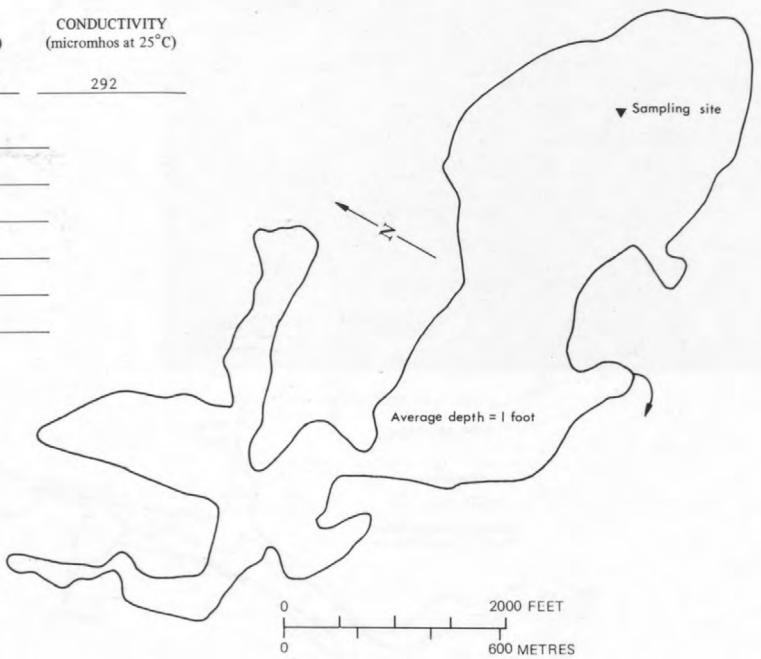
WATER-QUALITY DATA

SAMPLING TIME: 1330 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	3.0	21	7.5	292

ALKALINITY (mg/l as $CaCO_3$)	11
TOTAL HARDNESS (mg/l as $CaCO_3$)	100
DISSOLVED SOLIDS (mg/l)	188
TRANSPARENCY (metres)	.1
COLOR (Pt-Co units)	20
FECAL COLIFORM (colonies/100 ml)	640

BATHYMETRIC MAP



LOCATION: Sec.23, T.1 N., R.3 E., about 1.5 mi (2.5 km) northwest of Troutdale near the confluence of the Sandy and Columbia Rivers. Surface-water outlet at lat 45°33'45", long 122°24'22". Camas 7½-minute quadrangle map.

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 15 acres (61,000 m^2).

SURFACE ELEVATION: 20 ft (6 m) above mean sea level, from topographic map. Water level is dependent on Columbia River stage.

VOLUME: 50 acre-ft (62,000 m^3).

INFLOW: 5.4 ft^3/s (0.15 m^3/s) from aluminum plant on south side of lake. The lake is flooded by the Sandy River during extremely high water.

OUTFLOW: Through channel to the Columbia River on north side of lake.

USE: No public recreation.

REMARKS: No evidence of either floating or submerged aquatic vegetation. An algal bloom was evident on the survey date. The lake serves as a settling basin for industrial effluent from the nearby aluminum plant.

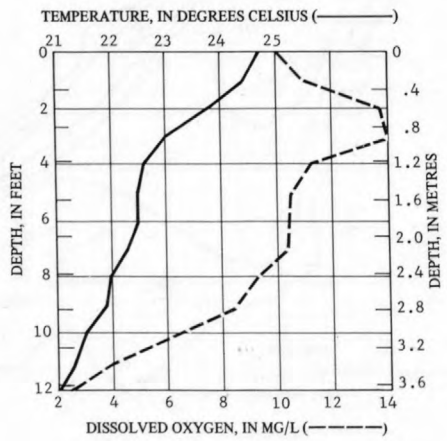
Photograph taken April 21, 1975.

WATER-QUALITY DATA

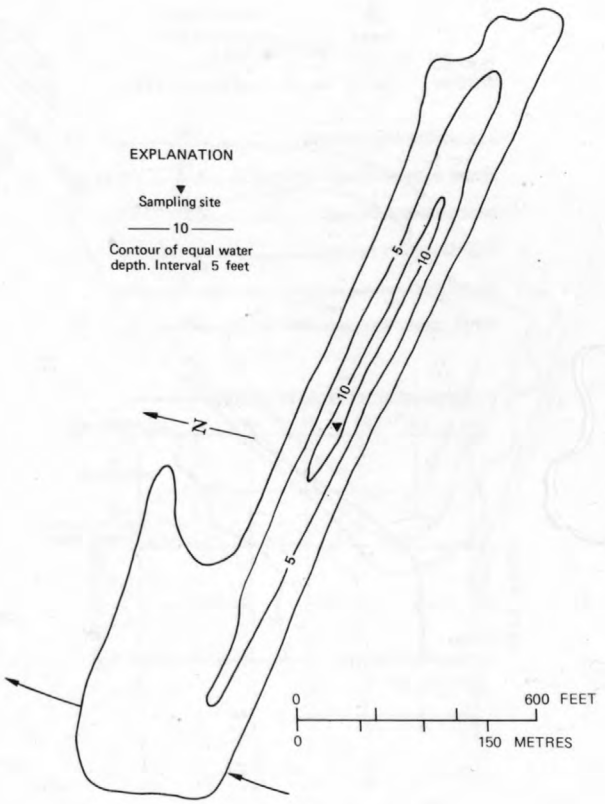
SAMPLING TIME: 1330 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	8.3	790
BOTTOM	7.6	864

ALKALINITY (mg/l as $CaCO_3$)	100
TOTAL HARDNESS (mg/l as $CaCO_3$)	140
DISSOLVED SOLIDS (mg/l)	523
TRANSPARENCY (metres)	.7
COLOR (Pt-Co units)	25
FECAL COLIFORM (colonies/100 ml)	5



BATHYMETRIC MAP



(8) FAIRVIEW LAKE

SURVEY DATE: September 11, 197

LOCATION: Secs.20 and 21, T.1 N., R.3 E., about 1 mi (1.6 km) north of Fairview and 3 mi (5 km) west of Troutdale. Surface-water outlet at lat 45°33'01", long 122°27'20". Camas 7½-minute quadrangle map.

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 70 acres (280,000 m^2).

SURFACE ELEVATION: 8 ft (2.4 m) above mean sea level, from topographic map.

VOLUME: 280 acre-ft (350,000 m^3).

INFLOW: From Fairview Creek on southeast side of lake.

OUTFLOW: Estimated 5 ft^3/s (0.14 m^3/s) through channel on west end of lake that flows to Columbia Slough.

USE: No public recreation.

REMARKS: Bottom material is mostly mud and detritus. Evidence of algal bloom.

The lake is formed by an earth-fill dam on the west end of the lake. The lake has been dredged along the north side.

Reference: 5.

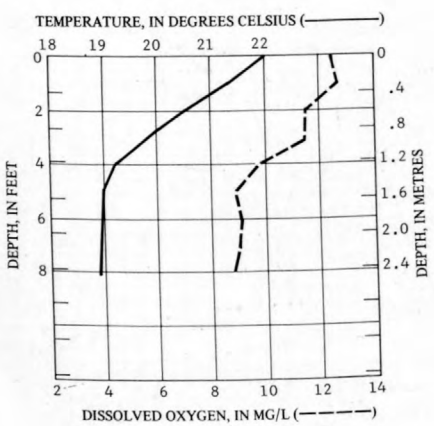
Photograph taken April 21, 1975.

WATER-QUALITY DATA

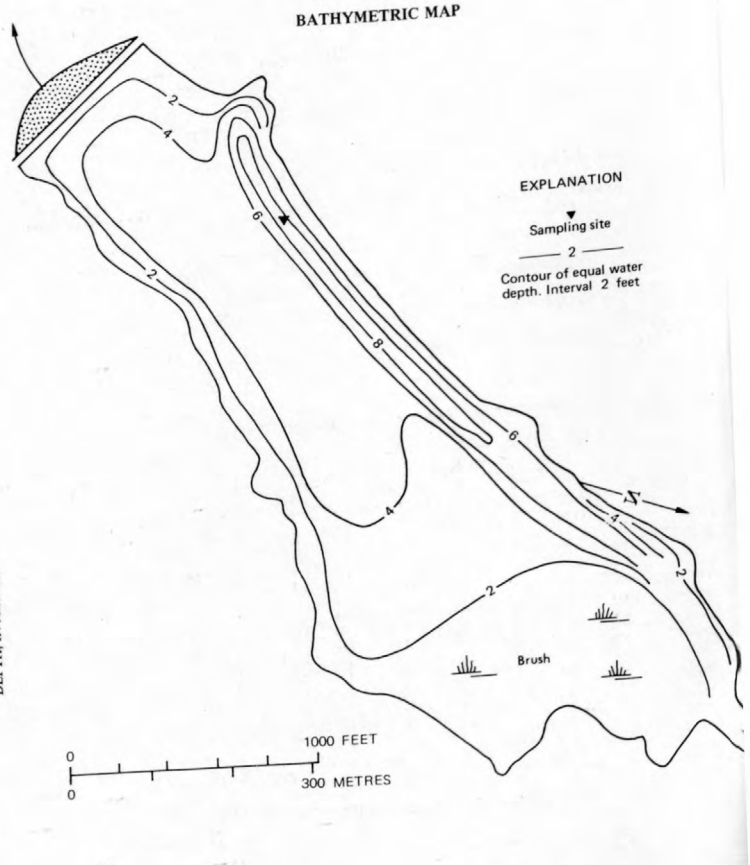
SAMPLING TIME: 1300 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	9.2	180
BOTTOM	8.2	192

ALKALINITY (mg/l as $CaCO_3$)	90
TOTAL HARDNESS (mg/l as $CaCO_3$)	79
DISSOLVED SOLIDS (mg/l)	119
TRANSPARENCY (metres)	.3
COLOR (Pt-Co units)	50
FECAL COLIFORM (colonies/100 ml)	120



BATHYMETRIC MAP



LOCATION: Sec.4, T.1 N., R.1 E., about 2 mi (3 km) southwest of Vancouver and 6 mi (9.5 km) north of the Portland city center. Southernmost tip of lake at lat 45°36'14", long 122°41'37". Portland 7½-minute quadrangle map.

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 10 acres (40,000 m^2).

SURFACE ELEVATION: Less than 10 ft (3 m) above mean sea level, from topographic map.

VOLUME: 25 acre-ft (31,000 m^3).

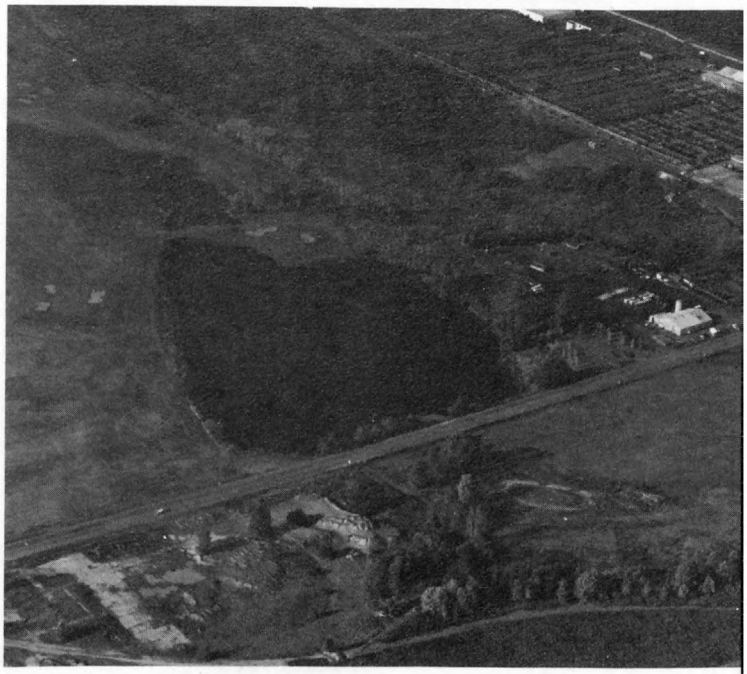
INFLOW: No channels observed, and none indicated on topographic map.

OUTFLOW: No channels observed, and none indicated on topographic map. The lake drains to the Columbia Slough via buried tiles on the northwest side of lake.

USE: Public fishing for warm-water fish.

REMARKS: The lake is one of several (see also Vanport Lake, p.46) artificial lakes that serve as water hazards at the West Delta Park golf course. It is surrounded by cattails, and the bottom material is mostly soft mud. Lake shows evidence of heavy algal bloom.

The lake was investigated in March 1974 by the Oregon State Department of Environmental Quality to determine the cause of recent fish kills. Results of the study can be obtained from that office.



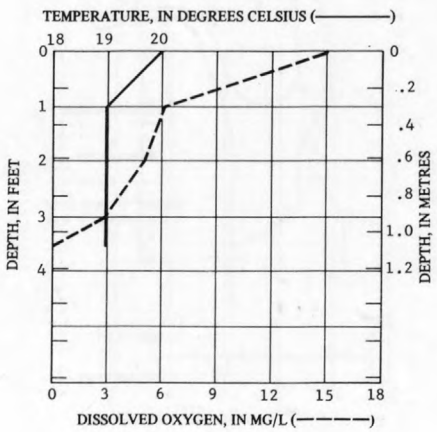
Photograph caken April 21, 1975.

WATER-QUALITY DATA

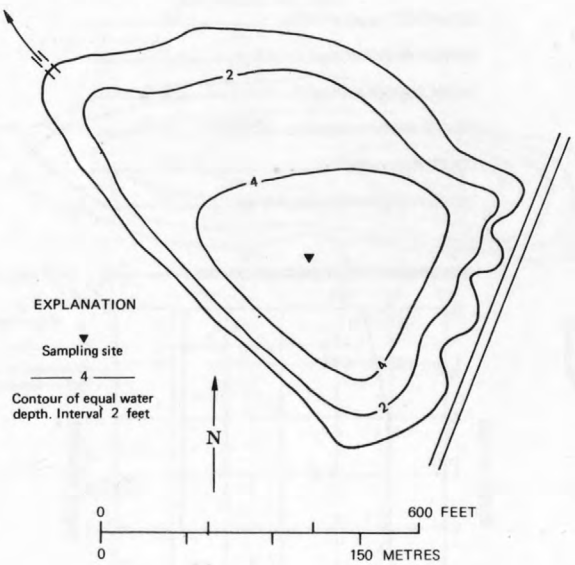
SAMPLING TIME: 1030 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	9.6	560
BOTTOM	9.5	560

ALKALINITY (mg/l as $CaCO_3$)	212
TOTAL HARDNESS (mg/l as $CaCO_3$)	140
DISSOLVED SOLIDS (mg/l)	507
TRANSPARENCY (metres)	.1
COLOR (Pt-Co units)	200
FECAL COLIFORM (colonies/100 ml)	42



BATHYMETRIC MAP



LOCATION: Sec.18, T.1 N., R.7 E., about 5 mi (8 km) southwest of Bonneville Dam. Surface-water outlet at lat 45°33'54", long 121°59'43". Bonneville Dam 15-minute quadrangle map.

DRAINAGE BASIN: Sandy River (Lower Columbia River).

DRAINAGE AREA: 0.15 mi^2 (0.39 km^2).

SURFACE AREA: 10 acres (40,000 m^2).

SURFACE ELEVATION: 3,250 ft (990 m) above mean sea level, from topographic map.

VOLUME: 25 acre-ft (31,000 m^3).

INFLOW: None observed, and no channels indicated on topographic map.

OUTFLOW: To North Fork Bull Run River on south side of lake.

USE: No public recreation.

REMARKS: No floating vegetation, although there is some bottom growth in the lake. Bottom material is mostly unconsolidated silt.

The city of Portland has exclusive rights to all waters within the Bull Run Reserve, which is closed to the general public.

Reference: 3.

Photograph taken May 21, 1975.

WATER-QUALITY DATA

SAMPLING TIME: 1430 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	6.8	16
BOTTOM	6.8	16

ALKALINITY (mg/l as $CaCO_3$) 15

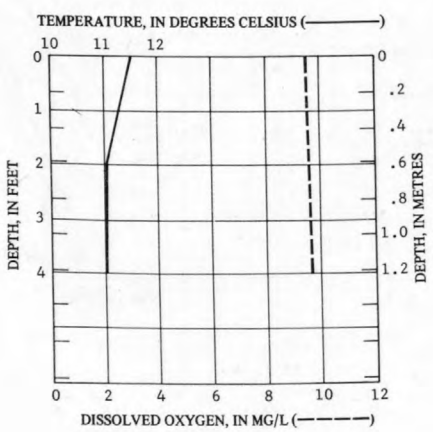
TOTAL HARDNESS (mg/l as $CaCO_3$) 5

DISSOLVED SOLIDS (mg/l) 14

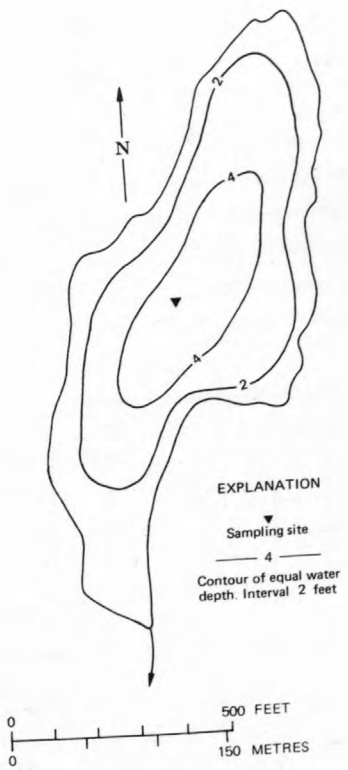
TRANSPARENCY (metres) (bottom) 1.2

COLOR (Pt-Co units) 10

FECAL COLIFORM (colonies/100 ml) 0



BATHYMETRIC MAP



LOCATION: SE¼ sec.16, T.1 N., R.2 E., about 0.5 mi (0.8 km) north of Parkrose and 2 mi (3 km) southeast of Portland International Airport. Surface-water outlet at lat 45°33'59", long 122°33'55". Mount Tabor 7½-minute quadrangle map (not named on map).

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 15 acres (61,000 m^2).

SURFACE ELEVATION: 20 ft (6 m) above mean sea level, from topographic map.

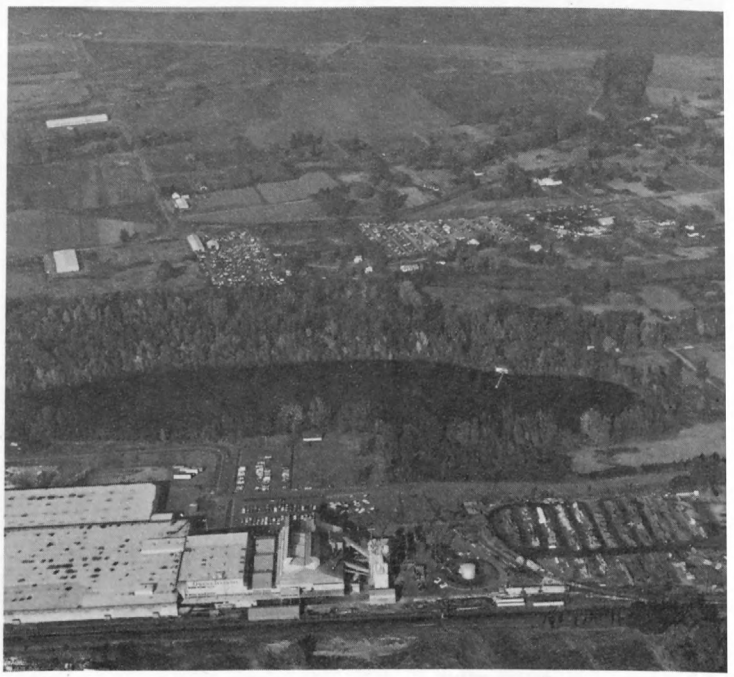
VOLUME: 65 acre-ft (80,000 m^3).

INFLOW: No channels observed, and none indicated on topographic map. Effluent from a nearby industrial plant enters through a pipe on the south side of the lake.

OUTFLOW: Estimated 8 ft^3/s (0.23 m^3/s) through northernmost culvert running under road about 400 ft (122 m) west of lake. Water from the lake drains into Columbia Slough.

USE: No public recreation.

REMARKS: There was evidence of both floating and submerged aquatic plants. Several large algal mats had accumulated in the outflow channel.



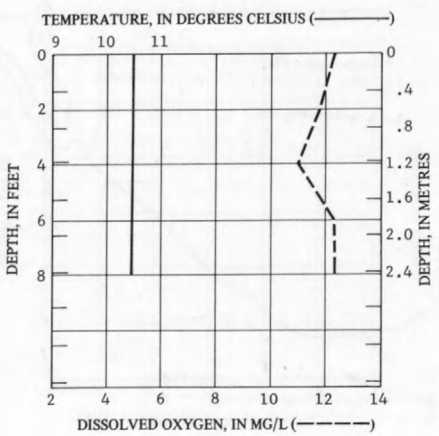
Photograph taken April 21, 1975.

WATER-QUALITY DATA

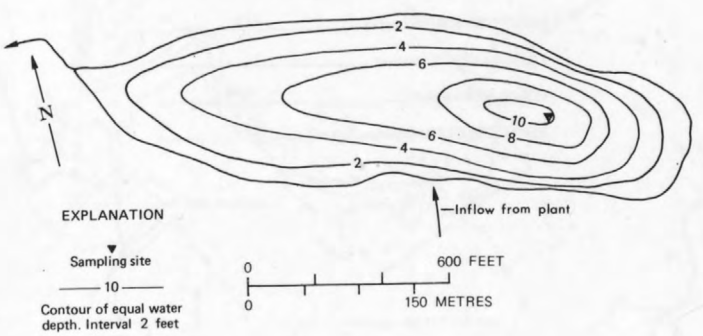
SAMPLING TIME: 1400 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.1	229
BOTTOM	7.0	229

ALKALINITY (mg/l as $CaCO_3$)	--
TOTAL HARDNESS (mg/l as $CaCO_3$)	89
DISSOLVED SOLIDS (mg/l)	193
TRANSPARENCY (metres)	.8
COLOR (Pt-Co units)	10
FECAL COLIFORM (colonies/100 ml)	0



BATHYMETRIC MAP



LOCATION: Sec.36, T.2 N., R.1 W., secs.31 and 32, T.2 N., R.1 E., and secs. 5 and 6, T.1 N., R.1 E., about 3.5 mi (5.5 km) west of Vancouver and 6.5 mi (10 km) north of Portland city center. Surface-water outlet at lat 45°36'53", long 122°44'05". Portland 7½-minute quadrangle map.

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 600 acres (2.4 km^2).

SURFACE ELEVATION: Less than 10 ft (3 m) above mean sea level, from topographic map. Water level is dependent on Columbia River stage.

VOLUME: 600 acre-ft (740,000 m^3).

INFLOW: None observed, and no channels indicated on topographic map.

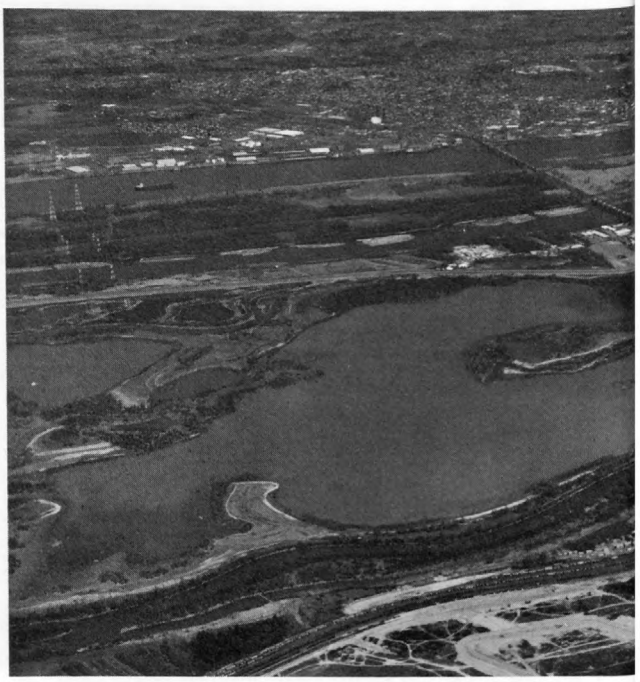
OUTFLOW: Connected to Bybee Lake (p. 38) by a channel on northwest side of lake.

USE: No public recreation without permission.

REMARKS: An algal bloom and a large crop of emergent aquatic growth were evident.

Like nearby Bybee Lake, this large, shallow lake often floods surrounding areas during periods of high water, yet it can also go dry during summer when the Columbia River is low.

According to the Oregon Wildlife Commission, a large number of ducks died during the summer of 1974 from botulism, which often affects shallow, organically rich lakes that become oxygen deficient. The large amount of organic material is evident from the high nonionized dissolved-solids value.



Photograph taken April 21, 1975.

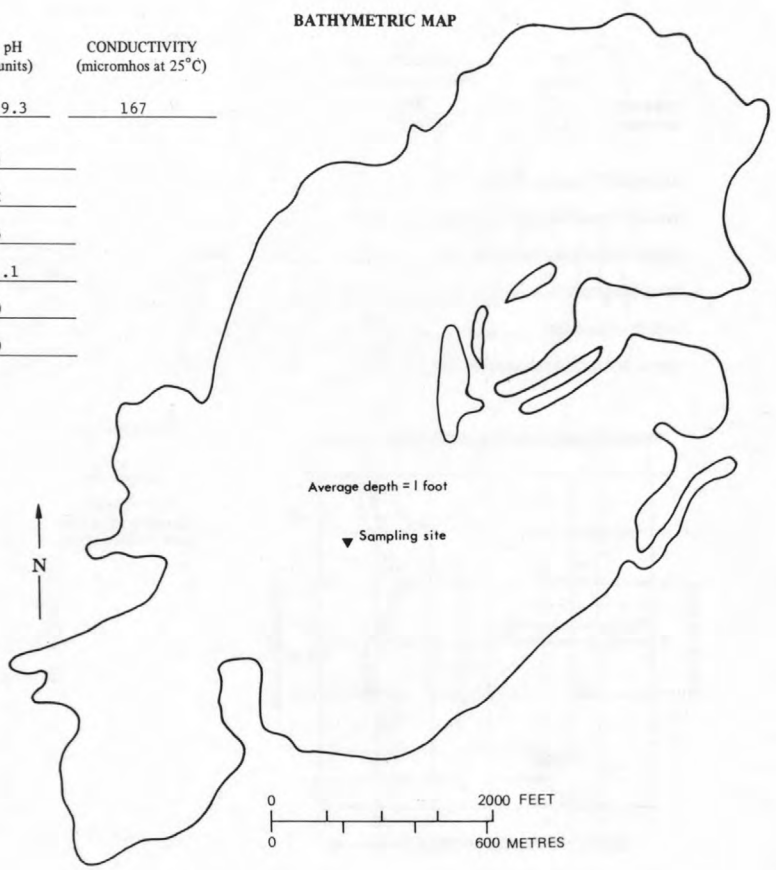
WATER-QUALITY DATA

SAMPLING TIME: 1500 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	17.5	21.2	9.3	167

ALKALINITY (mg/l as $CaCO_3$)	83
TOTAL HARDNESS (mg/l as $CaCO_3$)	72
DISSOLVED SOLIDS (mg/l)	226
TRANSPARENCY (metres)	.1
COLOR (Pt-Co units)	50
FECAL COLIFORM (colonies/100 ml)	420

BATHYMETRIC MAP



LOCATION: On Sauvie Island in secs.9, 10, 15, 16, 21, 22, 27, 28, 33, and 34, T.3 N., R.1 W., about 14 mi (23 km) northwest of Portland city center. Surface-water outlet at lat 45°44'29", long 122°48'09". Sauvie Island and St. Helens 7½-minute quadrangle maps.

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 3,200 acres (12.9 km^2).

SURFACE ELEVATION: Less than 10 ft (3 m) above mean sea level, from topographic map. Water level is dependent on Columbia River stage.

VOLUME: 5,400 acre-ft (6.7 hm^3).

INFLOW: None observed. A channel named the "Narrows" allows water to flow between Sturgeon Lake and Steelman Lake.

OUTFLOW: Gilbert River. (See bathymetric map.)

USE: Public recreation. Fishing for bass, perch, bluegill, and crappie (Oregon State Wildlife Commission). The lake is part of the Sauvie Island Game Management Area. Angling is not permitted during duck-hunting season.

REMARKS: No evidence of either floating or submerged aquatic growth. Bottom material is mostly mud.

The lake, located on the Multnomah-Columbia County line, is listed as Columbia County no. 15 in volume 1 of "Lakes of Oregon." The survey date for that study was September 13, 1972.

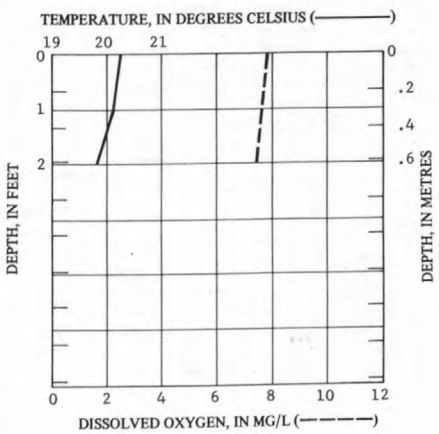
Reference: 5.

WATER-QUALITY DATA

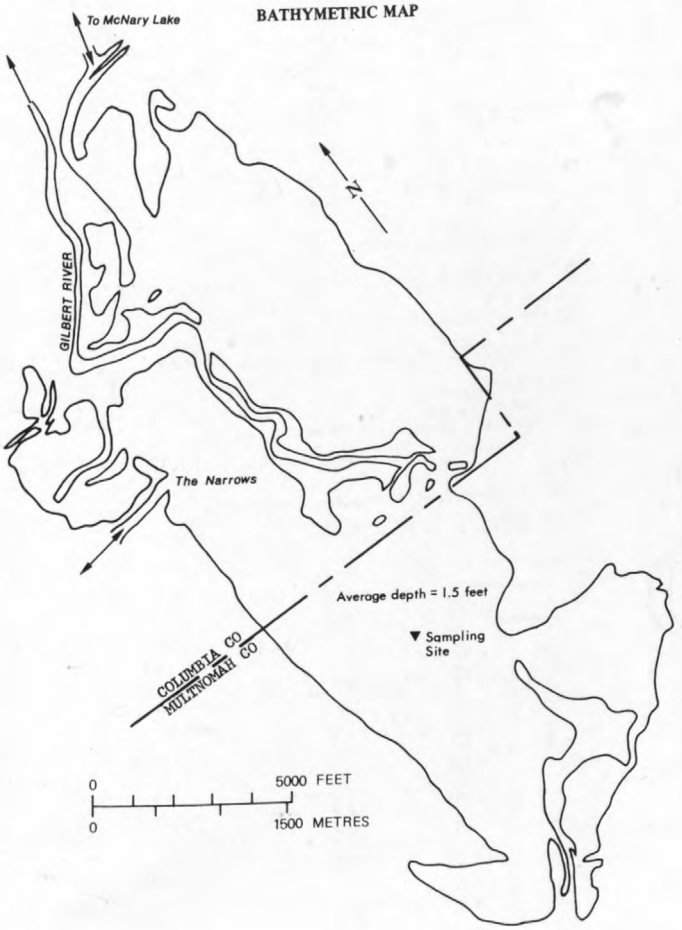
SAMPLING TIME: 1200 hours
CLOUD COVER: 100 percent

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.6	102
BOTTOM	7.6	102

ALKALINITY (mg/l as $CaCO_3$)	32
TOTAL HARDNESS (mg/l as $CaCO_3$)	37
DISSOLVED SOLIDS (mg/l)	76
TRANSPARENCY (metres)	.1
COLOR (Pt-Co units)	20
FECAL COLIFORM (colonies/100 ml)	330



BATHYMETRIC MAP



LOCATION: NE¼ sec.5, T.1 N., R.1 E., about 2.5 mi (4 km) southwest of Vancouver and 6 mi (9.5 km) north of Portland city center. Southernmost tip of lake at lat 45°36'09", long 122°42'19". Portland 7½-minute quadrangle map (not named on map.)

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 9 acres (36,000 m^2).

SURFACE ELEVATION: Less than 10 ft (3 m) above mean sea level, from topographic map. Water level is dependent on Columbia River stage.

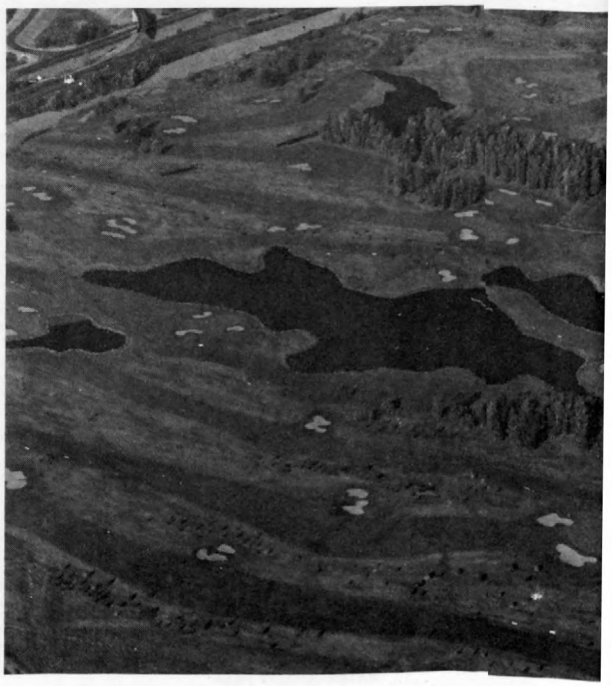
VOLUME: 20 acre-ft (25,000 m^3).

INFLOW: No channels observed, and none indicated on topographic map.

OUTFLOW: No channels observed, and none indicated on topographic map.

USE: No public recreation.

REMARKS: The lake is one of several (see also Force Lake, p. 41) artificial lakes that serve as water hazards at the West Delta Park golf course. It is surrounded by cattails, and the bottom material is mostly soft mud. On the survey date, a recent algal bloom was evident.



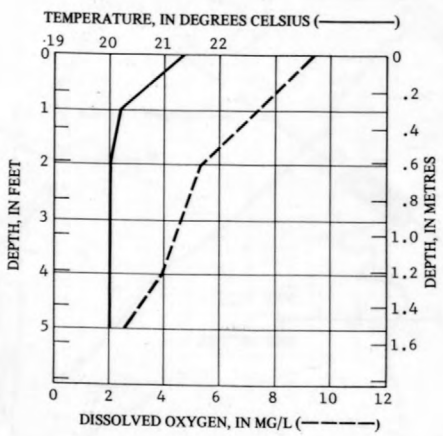
Photograph taken April 21, 1975.

WATER-QUALITY DATA

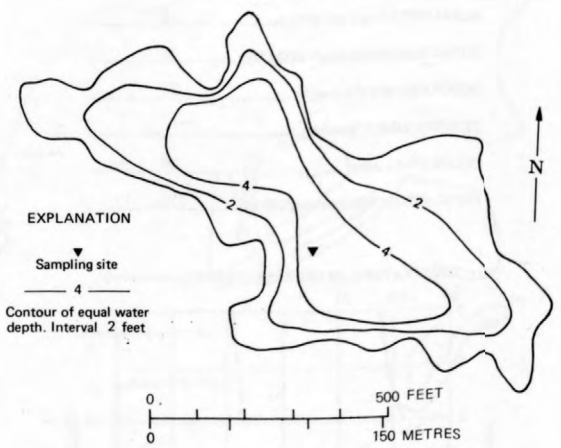
SAMPLING TIME: 1130 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	8.7	330
BOTTOM	8.4	330

ALKALINITY (mg/l as $CaCO_3$)	146
TOTAL HARDNESS (mg/l as $CaCO_3$)	160
DISSOLVED SOLIDS (mg/l)	222
TRANSPARENCY (metres)	.2
COLOR (Pt-Co units)	80
FECAL COLIFORM (colonies/100 ml)	8



BATHYMETRIC MAP



LOCATION: Secs.12 and 13, T.1 N., R.5 E., about 4 mi (6.5 km) northwest of Larch Mountain and 27 mi (43 km) east of Portland city center, Surface-water outlet at lat 45°34'31", long 122°08'22". Bridal Veil 15-minute quadrangle map (not shown on map).

DRAINAGE BASIN: Lower Columbia River.

DRAINAGE AREA: 1.21 mi^2 (3.13 km^2).

SURFACE AREA: 20 acres (81,000 m^2).

SURFACE ELEVATION: 28 ft (8.5 m) above mean sea level at normal pool.

VOLUME: 180 acre-ft (220,000 m^3).

INFLOW: Estimated 1.5 ft^3/s (0.04 m^3/s) from the two Wahkeena Creek diversions on the east side of lake. No measurable flow through culvert on southwest side of lake.

OUTFLOW: Regulated by outlet valve to the Columbia River.

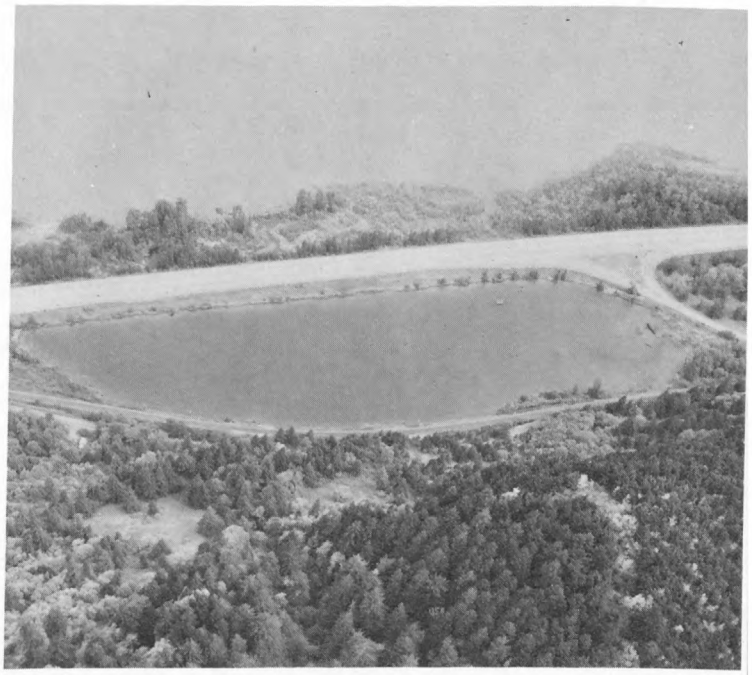
USE: The only approved recreational use is for the Portland Model Power Boat Association. The Oregon State Fish Commission uses the lake for rearing of silver salmon.

REMARKS: There were large clumps of algae floating throughout the lake on the survey date. Water smartweed was also evident, particularly on the east end. Bottom material is mostly sand and gravel covered by detritus.

The lake was artificially formed by road construction and small dikes.

Bathymetry and surface elevation furnished by the Oregon State Engineer.

Water-rights certificate issued for the diversion of 30.0 ft^3/s (0.85 m^3/s) and storage of 180 acre-ft (220,000 m^3) for fish culture.



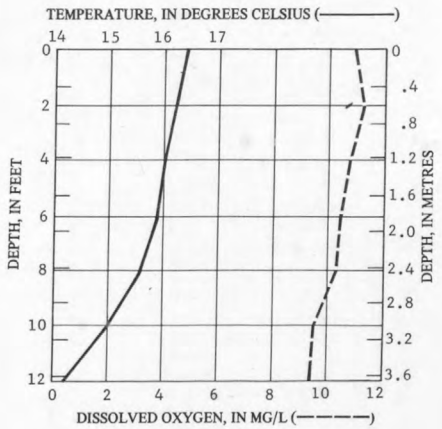
Photograph taken May 21, 1975.

WATER-QUALITY DATA

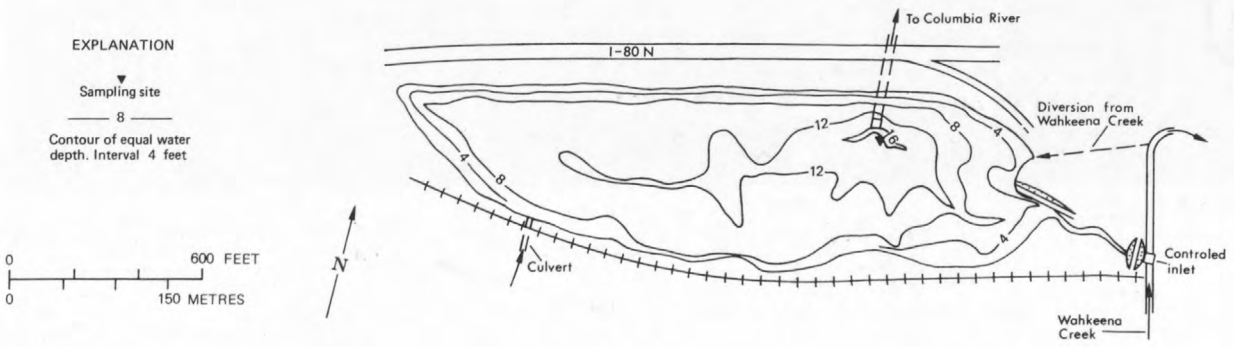
SAMPLING TIME: 1030 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	8.2	63
BOTTOM	8.0	63

ALKALINITY (mg/l as $CaCO_3$)	34
TOTAL HARDNESS (mg/l as $CaCO_3$)	26
DISSOLVED SOLIDS (mg/l)	45
TRANSPARENCY (metres)	.5
COLOR (Pt-Co units)	25
FECAL COLIFORM (colonies/100 ml)	0



BATHYMETRIC MAP



Washington County

Hagg Lake

Lakes of Washington County

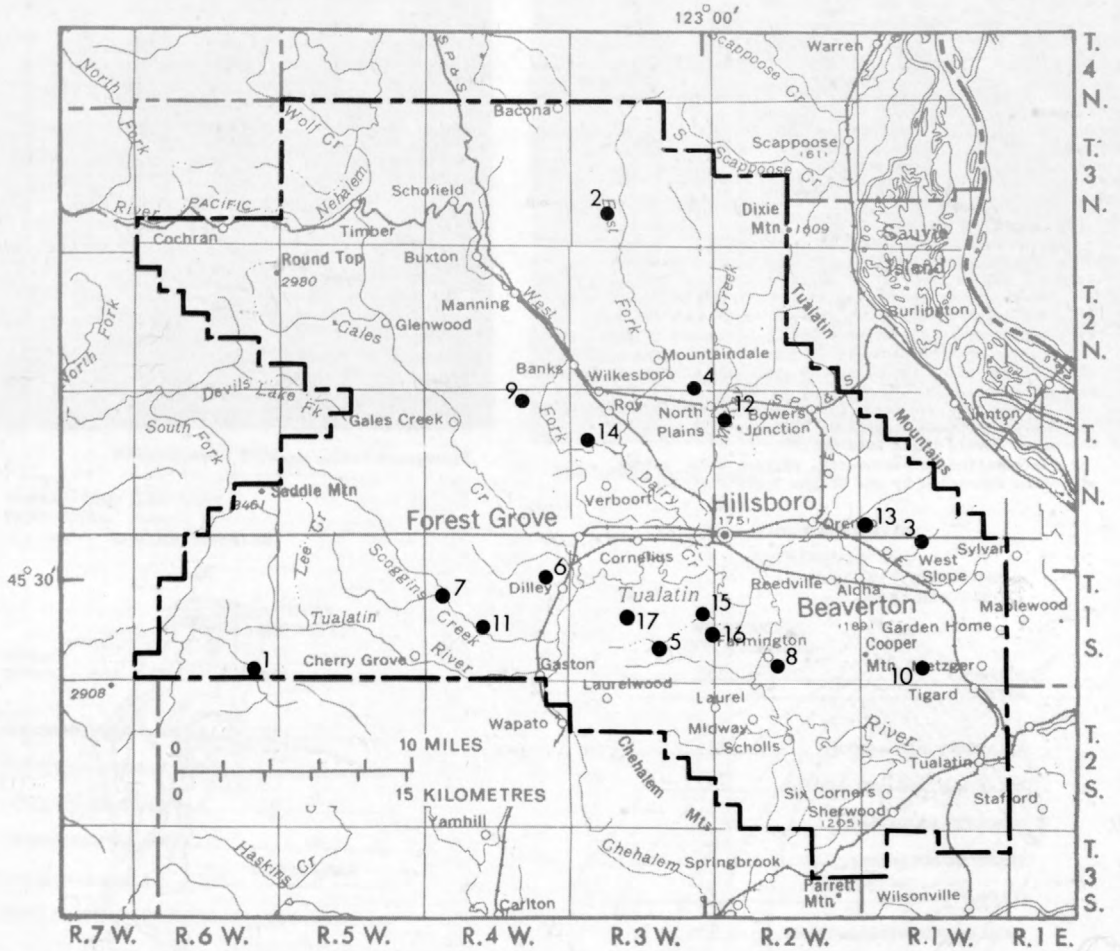


Figure 6.—Locations and identification numbers of lakes in Washington County.

LOCATION: Secs.35 and 36, T.1 S., R.6 W., and sec.1 T.2 S., R.6 W., about 6.5 mi (10 km) west of Cherry Grove and 7.5 mi (12 km) northwest of Pike. Surface-water outlet at lat 45°26'49", long 123°23'40". Fairdale 15-minute quadrangle map (not shown on map).

DRAINAGE BASIN: Trask River (Pacific Slope).

DRAINAGE AREA: 8.09 mi^2 (20.9 km^2).

SURFACE AREA: 200 acres (810,000 m^2) at normal pool.

SURFACE ELEVATION: 1,590 ft (485 m) above mean sea level at normal pool.

VOLUME: 4,000 acre-ft (4.9 hm^3) at normal pool. Of this total, 460 acre-ft (570,000 m^3) is dead storage.

INFLOW: Estimated a total of 5 ft^3/s (0.14 m^3/s) from all inflow streams.

OUTFLOW: Estimated 5 ft^3/s (0.14 m^3/s) through flume on downstream side of dam to the Middle Fork of the North Fork Trask River.

USE: No public recreation.

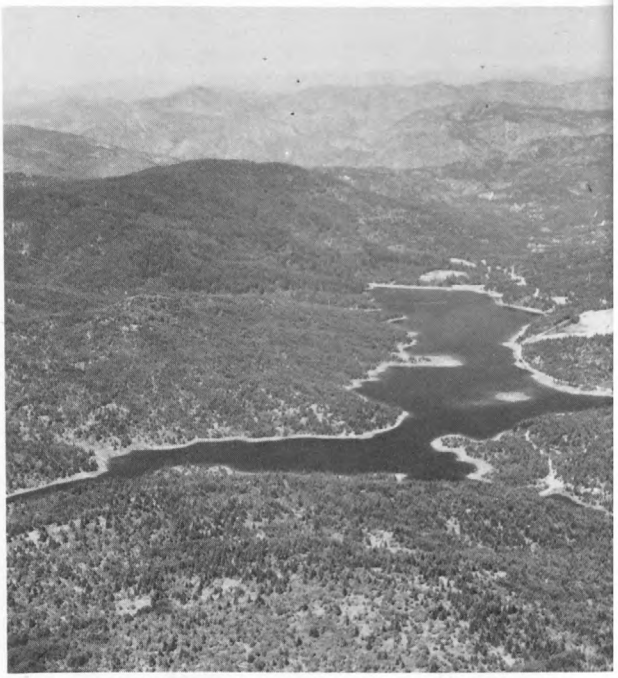
REMARKS: No evidence of either floating or submerged aquatic growth. Bottom material is mostly clay.

Water-rights permit issued for storage of 20,000 acre-ft (24.7 hm^3) and diversion of 38.7 ft^3/s (1.10 m^3/s) for Hillsboro's municipal water supply. Additional rights issued for storage of 2,000 acre-ft (2.5 hm^3) and diversion of 30.0 ft^3/s) (0.85 m^3/s) for pollution abatement within the Tualatin River channel.

Expansion plans call for enlargement of the reservoir to the maximum allowed storage by 1986.

Also called Trask Reservoir.

Information on bathymetry, surface area, volume, and elevation furnished by the Oregon State Engineer.



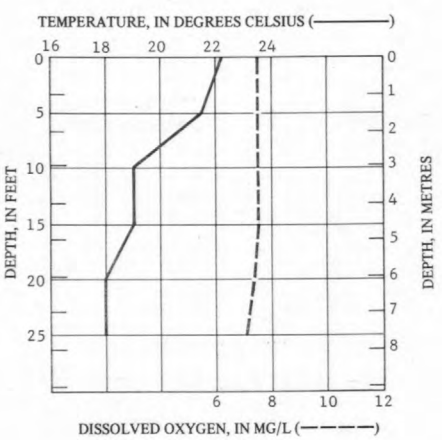
Photograph taken August 1, 1974.

WATER-QUALITY DATA

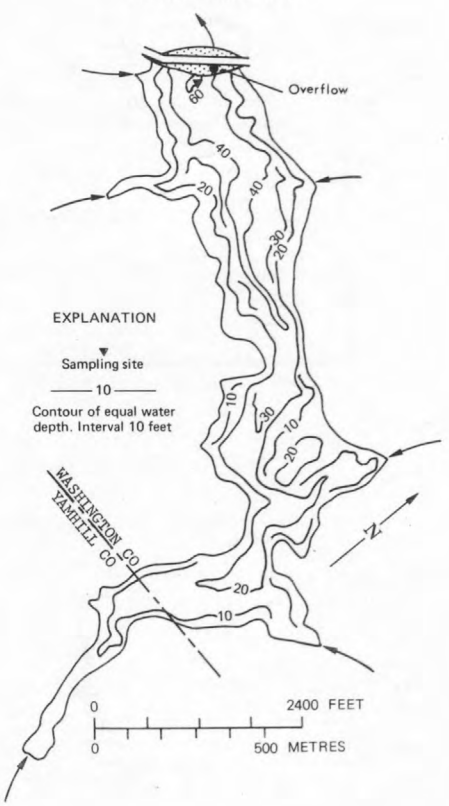
SAMPLING TIME: 1300 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.5	52
BOTTOM	7.1	51

ALKALINITY (mg/l as $CaCO_3$)	39
TOTAL HARDNESS (mg/l as $CaCO_3$)	20
DISSOLVED SOLIDS (mg/l)	42
TRANSPARENCY (metres)	3.7
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	0



BATHYMETRIC MAP



LOCATION: Sec.29, T.3 N., R.3 W., about 9 mi (14 km) northwest of North Plains and 13 mi (21 km) north of Forest Grove. Surface-water outlet at lat 45°42'47", long 123°05'04". Forest Grove 15-minute quadrangle map (not named on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 0.18 mi^2 (0.47 km^2).

SURFACE AREA: 8 acres (32,000 m^2).

SURFACE ELEVATION: 950 ft (290 m) above mean sea level, from topographic map.

VOLUME: 95 acre-ft (120,000 m^3).

INFLOW: No channels observed and none indicated on topographic map.

OUTFLOW: Through dam on north side of lake to East Fork Dairy Creek.

USE: No public recreation.

REMARKS: No evidence of either floating or submerged aquatic growth.

Information on bathymetry, surface area, and volume furnished by the Oregon State Engineer.

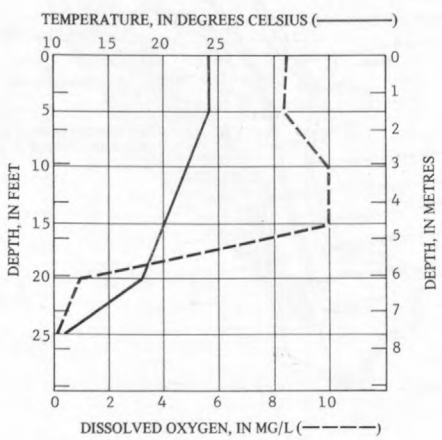
Photograph taken August 1, 1974.

WATER-QUALITY DATA

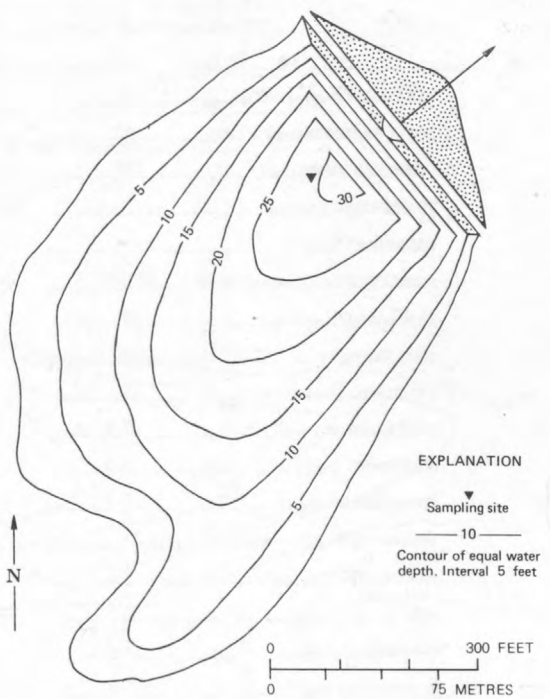
SAMPLING TIME: 1300 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.6	30
BOTTOM	6.3	123

ALKALINITY (mg/l as $CaCO_3$)	--
TOTAL HARDNESS (mg/l as $CaCO_3$)	10
DISSOLVED SOLIDS (mg/l)	26
TRANSPARENCY (metres)	4.6
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	0



BATHYMETRIC MAP



WASHINGTON COUNTY

(3) COMMONWEALTH LAKE

SURVEY DATE: August 16, 1974

LOCATION: Secs.3 and 4, T.1 S., R.1 W., about 0.5 mi (0.8 km) north of Cedar Hills and 6 mi (9.5 km) west of Portland city center. Surface-water outlet at lat 45°30'42", long 122°48'35". Linnton 7½-minute quadrangle map, photorevised 1970 (not named on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 5 acres (20,000 m^2).

SURFACE ELEVATION: 190 ft (58 m) above mean sea level, from topographic map.

VOLUME: 15 acre-ft (18,000 m^3).

INFLOW: Estimated 0.5 ft^3/s (0.01 m^3/s) from channel on east end of lake. Springs on the northeast end also contribute to the lake.

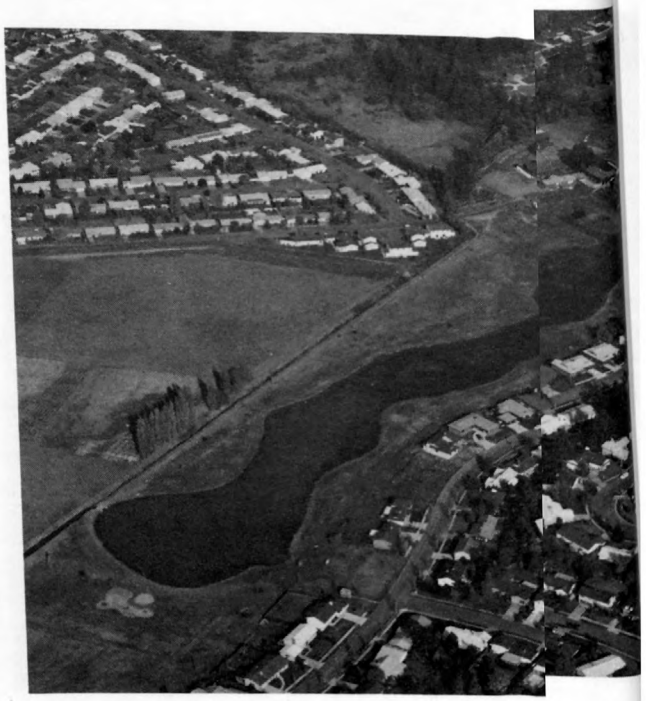
OUTFLOW: Estimated 1 ft^3/s (0.3 m^3/s) through concrete control structure on southwest end of lake to Johnson Creek.

USE: Public recreation. The lake was stocked by the Oregon State Wildlife Commission and the Northwest Steelheaders Association for fishing by youth only.

REMARKS: Very heavy growths of submerged vegetation were being removed from the lake on the survey date. Influent water flows through a residential area before entering the lake.

Water-rights certificate issued to the Tualatin Hills Park and Recreation District for the storage of 14.85 acre-ft (18,310 m^3) for recreation.

Information on bathymetry, surface area, and volume furnished by the Oregon State Engineer.



Photograph taken November 4, 1974.

WATER-QUALITY DATA

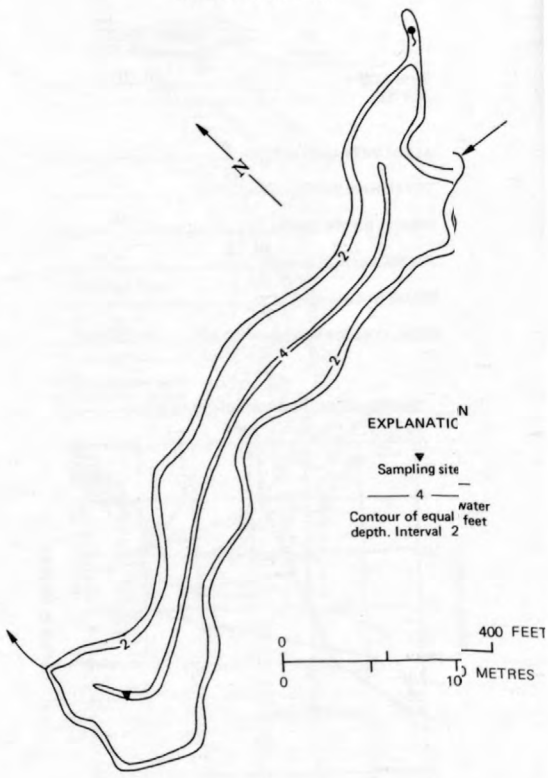
SAMPLING TIME: 1300 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/1)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	14.8	20.0	9.1	167
BOTTOM	14.8	20.9	9.0	162

ALKALINITY (mg/1 as $CaCO_3$)	59
TOTAL HARDNESS (mg/1 as $CaCO_3$)	65
DISSOLVED SOLIDS (mg/1)	128
TRANSPARENCY (metres)	.3
COLOR (Pt-Co units)	--
FECAL COLIFORM (colonies/100 ml)	TNTC[1/]
SILICA (SiO_2) (mg/1)	39
IRON (Fe) (ug/1)	160
CALCIUM (Ca) (mg/1)	15
MAGNESIUM (Mg) (mg/1)	6.6
SODIUM (Na) (mg/1)	8.8
POTASSIUM (K) (mg/1)	2.0
BICARBONATE (HCO_3) (mg/1)	75
CARBONATE (CO_3) (mg/1)	0
SULFATE (SO_4) (mg/1)	8.4
CHLORIDE (Cl) (mg/1)	6.7
FLUORIDE (F) (mg/1)	.1
NITRITE+NITRATE (as N) (mg/1)	1.0
ORTHOPHOSPHORUS (as P) (mg/1)	.08

1/ Too numerous to count.

BATHYMETRIC MAP



LOCATION: Sec.36, T.2 N., R.3 W., and sec.1 T.1 N., R.3 W., about 0.5 mi (0.8 km) northwest of North Plains and 5 mi (8 km) east of Banks. Surface-water outlet at lat 45°36'25", long 123°00'30". Forest Grove 7½-minute quadrangle map, photorevised 1970 (not named on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 0.11 mi^2 (0.28 km^2).

SURFACE AREA: 14 acres (57,000 m^2) at normal pool.

SURFACE ELEVATION: 205 ft (62 m) above mean sea level, from topographic map.

VOLUME: 98 acre-ft (121,000 m^3) at normal pool.

INFLOW: No measurable flow through channel on east side of reservoir.

OUTFLOW: None observed through overflow tube on west end of reservoir near dam.

USE: No public recreation.

REMARKS: Water-rights certificate issued for the storage of 112 acre-ft (138,000 m^3) and diversion of 0.45 ft^3/s (0.01 m^3/s) for irrigation.

Information on bathymetry, surface area, and volume furnished by the Oregon State Engineer.

Photograph taken November 4, 1974.

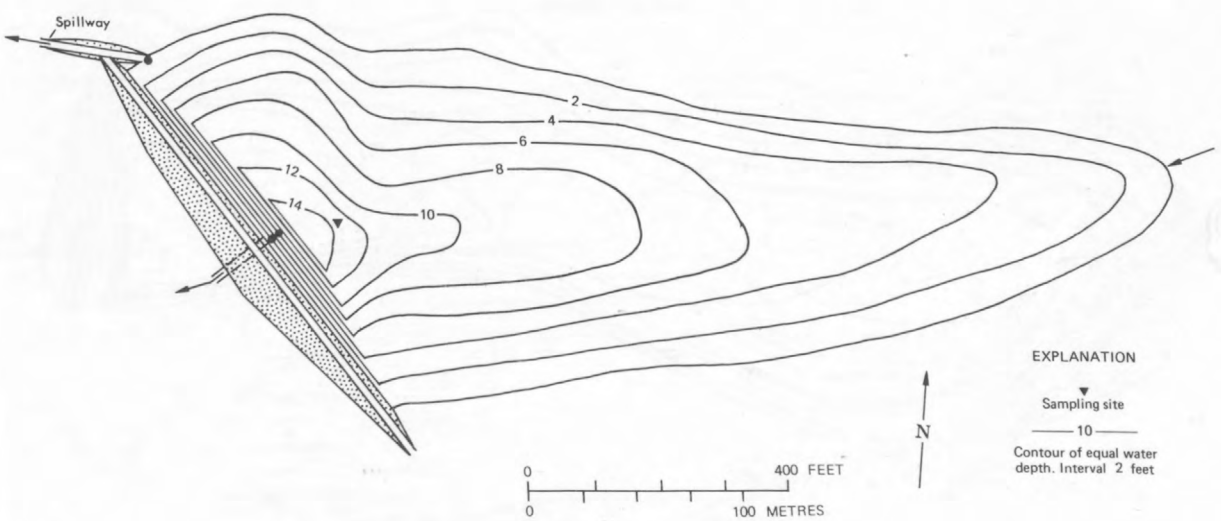
WATER-QUALITY DATA

SAMPLING TIME: 1200 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	8.2	26.0	7.8	137
BOTTOM	.6	20.5	6.9	152

TRANSPARENCY (Metres) -- COLOR (Pt-Co units) 20

BATHYMETRIC MAP



LOCATION: Secs.26 and 27, T.1 S., R.3 W., about 3.5 mi (5.5 km) northeast of Laurelwood and 6 mi (9.5 km) southeast of Forest Grove. Surface-water outlet at lat 45°27'41", long 123°01'46". Laurelwood 7½-minute quadrangle map (not named on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 1.95 mi^2 (5.05 km^2).

SURFACE AREA: 12 acres (49,000 m^2) at normal pool.

SURFACE ELEVATION: 348 ft (107 m) above mean sea level, from topographic map.

VOLUME: 67 acre-ft (83,000 m^3) at normal pool.

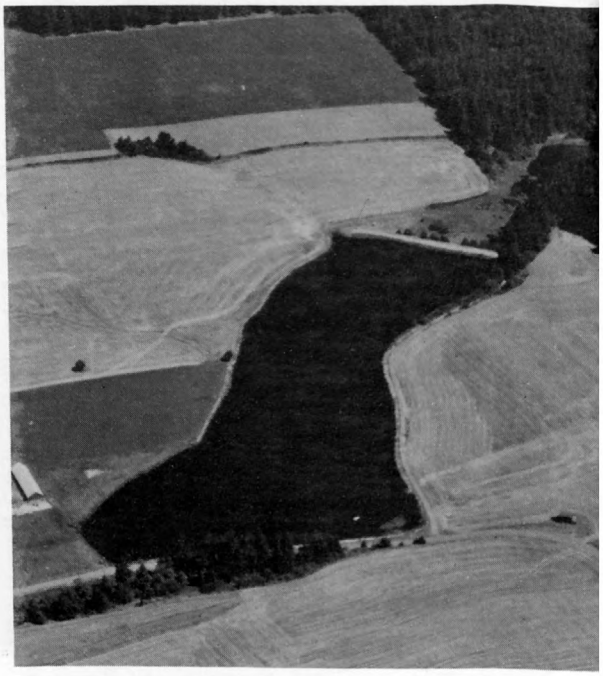
INFLOW: No measurable flow through channel on southwest side of lake on August 18, 1974.

OUTFLOW: No flow observed through outlet pipe to channel on northeast side of reservoir on August 18, 1974.

USE: No public recreation without owner's consent.

REMARKS: Water-rights certificate issued for storage of 67.5 acre-ft (83,200 m^3) and diversion of 0.688 ft^3/s (0.02 m^3/s) for irrigation.

Information on bathymetry, surface area, and volume furnished by the Oregon State Engineer.



Photograph taken August 1, 1974.

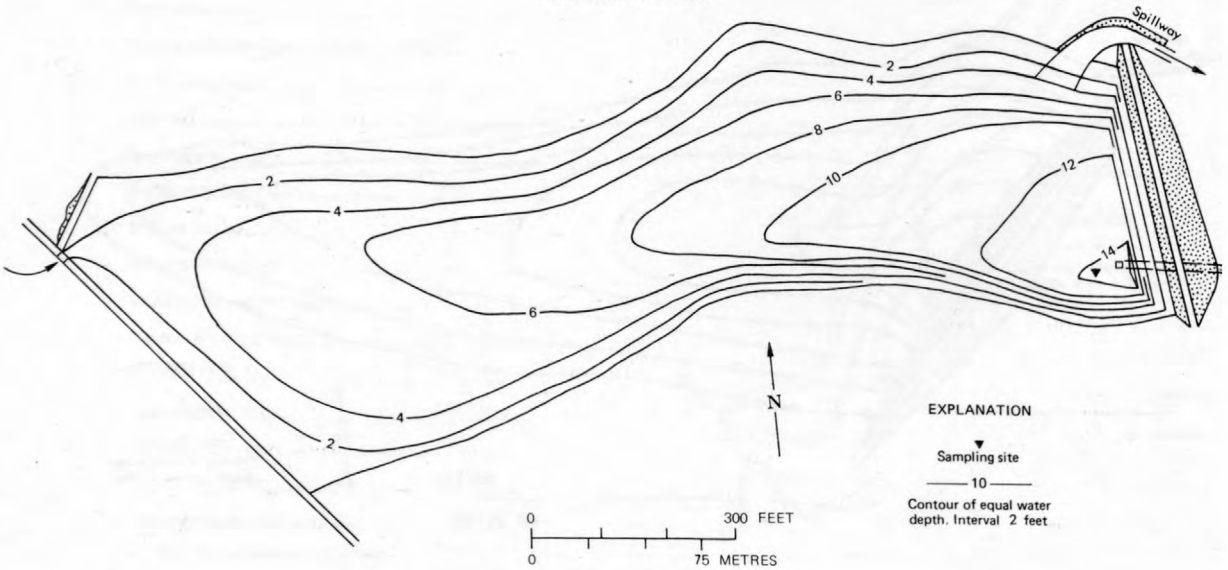
WATER-QUALITY DATA

SAMPLING TIME: 1500 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	9.8	18.0	7.5	56
BOTTOM	8.0	14.5	6.9	63

TRANSPARENCY (Metres) (bottom) 1.1 COLOR (Pt-Co units) --

BATHYMETRIC MAP



LOCATION: Sec.11, T.1 S., R.4 W., about 0.5 mi (0.8 km) west of Dilley and 4 mi (6.5 km) north of Gaston. Surface-water outlet at lat 45°29'31", long 123°08'06". Gaston 7½-minute quadrangle map, photorevised 1970 (not named on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 0.64 mi^2 (1.66 km^2).

SURFACE AREA: 15 acres (61,000 m^2) at normal pool.

SURFACE ELEVATION: 230 ft (70 m) above mean sea level, from topographic map. Water level was about 8 ft (2.4 m) below normal pool on the survey date.

VOLUME: 180 acre-ft (222,000 m^3) at normal pool.

INFLOW: No flow observed in Dilley Creek on northwest side of lake.

OUTFLOW: No flow observed through overflow tube on south side of lake near dam.

USE: No public recreation.

REMARKS: Water-rights certificate issued for storage of 180 acre-ft (222,000 m^3) and diversion of 2.44 ft^3/s (0.069 m^3/s) for irrigation.

Information on bathymetry, surface area, and volume furnished by the Oregon State Engineer.

Photograph taken August 1, 1974.

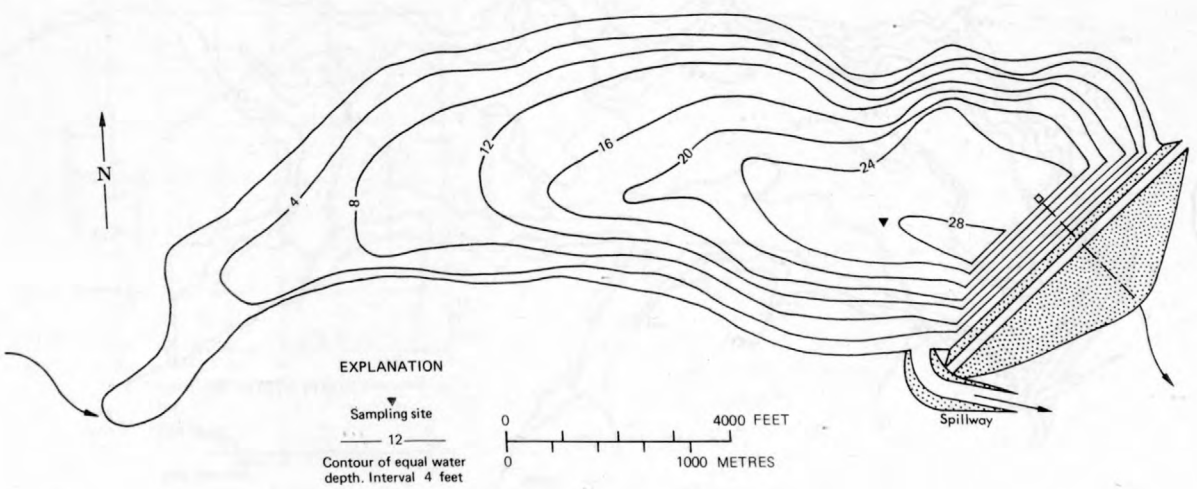
WATER-QUALITY DATA

SAMPLING TIME: 0900 hours
CLOUD COVER: 100 percent

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.3	20.5	7.1	57
BOTTOM	.7	12.3	6.8	158

TRANSPARENCY (Metres) 0.6 COLOR (Pt-Co units) 30

BATHYMETRIC MAP



LOCATION: Secs.7, 8, 17, 18, 19, and 20, T.1 S., R.4 W., and secs.12 and 13, T.1 S., R.5 W., about 4 mi (6.5 km) northwest of Gaston and 6 mi (8 km) southwest of Forest Grove. Surface-water outlet at lat 45°28'32", long 123°11'50". Gaston 7½-minute quadrangle map (not shown on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 38.7 mi^2 (100 km^2).

SURFACE AREA: 1,110 acres (450 hm^2) at normal pool.

SURFACE ELEVATION: 304 ft (93 m) above mean sea level at normal pool; 282 ft (86 m) above mean sea level is the average pool elevation during the recreation season.

VOLUME: 59,200 acre-ft (73 hm^3) at normal pool.

INFLOW: Primary inflow streams are named on the bathymetric map.

OUTFLOW: 88 ft^3/s (2.5 m^3/s), from record at U.S. Geological Survey gaging station 14-2029.80 just downstream from spillway on the survey date.

USE: Public recreation, including boating, swimming, and fishing. The lake is stocked with both fingerling and legal-sized rainbow trout by the Oregon State Game Commission. There is also a small cutthroat trout population.

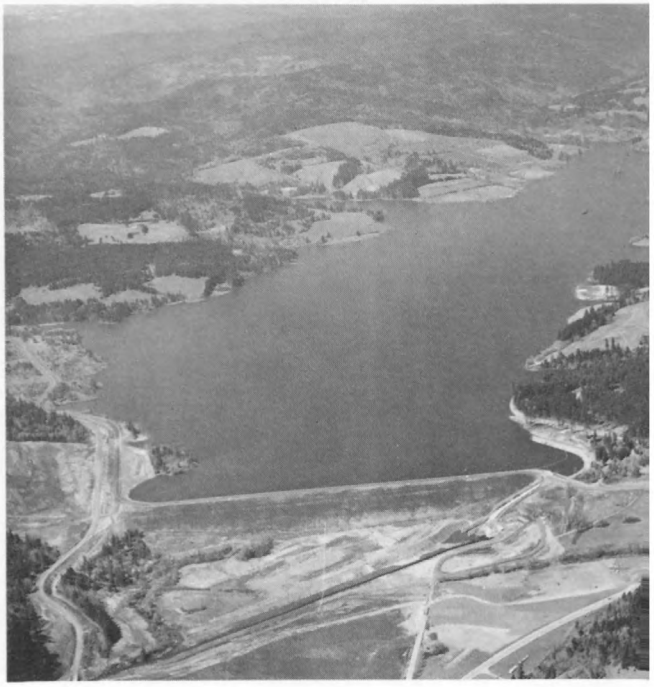
REMARKS: No evidence of either floating or submerged aquatic growth.

The lake is formed by an earth-fill dam and was filled to capacity for the first time in the spring of 1975.

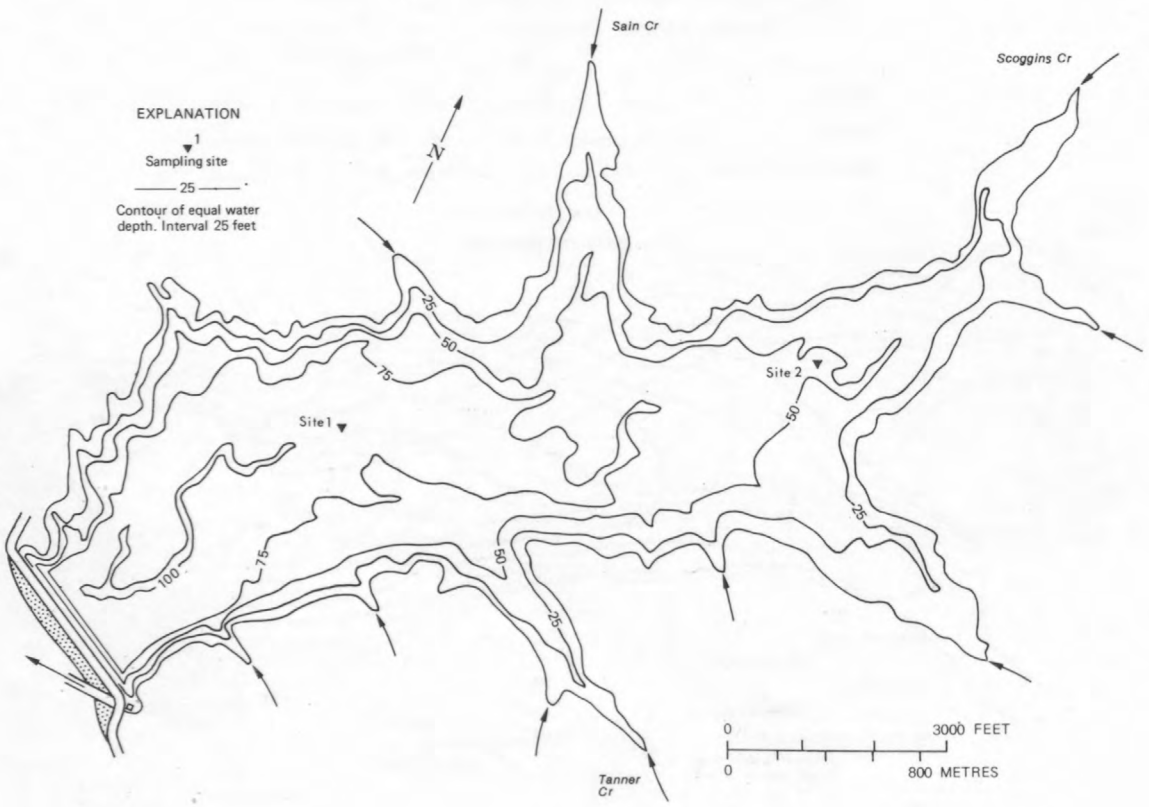
The U.S. Geological Survey maintains stream-gaging stations on both Scoggins (14-2028.50) and Sain (14-2029.20) Creeks.

Water-rights permit issued for storage of 60,000 acre-ft (74 hm^3) and diversion of 366.8 ft^3/s (10.39 m^3/s) for irrigation, municipal water supply, and quality control.

Information on bathymetry, surface area, volume, and elevation furnished by the U.S. Bureau of Reclamation.



Photograph taken April 21, 1975.

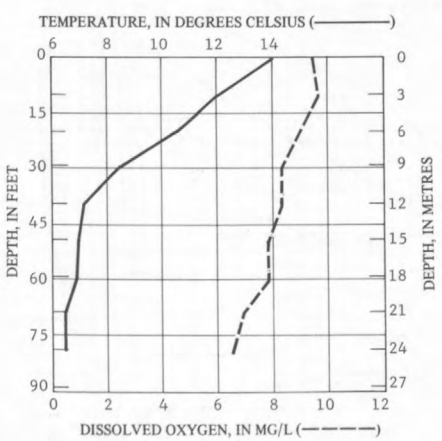


WATER-QUALITY DATA
Site No. 1

SAMPLING TIME: 1100 hours
CLOUD COVER: 25 percent

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.7	53
BOTTOM	6.9	55

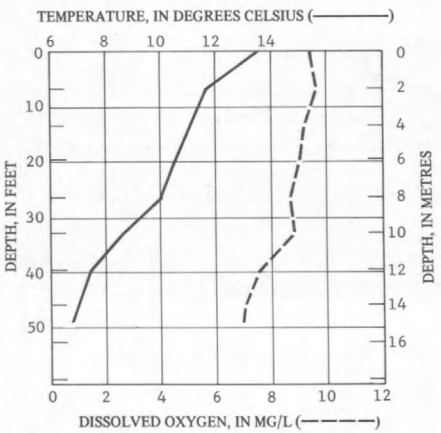
ALKALINITY (mg/1 as $CaCO_3$)	25
TOTAL HARDNESS (mg/1 as $CaCO_3$)	20
DISSOLVED SOLIDS (mg/1)	39
TRANSPARENCY (metres)	2.9
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	3
SILICA (SiO_2) (mg/1)	12
IRON (Fe) (ug/1)	20
CALCIUM (Ca) (mg/1)	5.0
MAGNESIUM (Mg) (mg/1)	1.9
SODIUM (Na) (mg/1)	3.1
POTASSIUM (K) (mg/1)	.7
BICARBONATE (HCO_3) (mg/1)	25
CARBONATE (CO_3) (mg/1)	0
SULFATE (SO_4) (mg/1)	1.6
CHLORIDE (Cl) (mg/1)	2.4
FLUORIDE (F) (mg/1)	.1
NITRITE+NITRATE (as N) (mg/1)	.00
ORTHOPHOSPHORUS (as P) (mg/1)	.01



WATER-QUALITY DATA
Site No. 2

SAMPLING TIME: 1130 hours
CLOUD COVER: 25 percent

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.9	51
BOTTOM	6.9	55



LOCATION: Sec.33, T.1 S., R.2 W., about 1 mi (1.5 km) southeast of Farmington and 2 mi (3 km) north of Scholls. Surface-water outlet at lat 45°26'13", long 122°56'00". Scholls 7½-minute quadrangle map.

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 1.98 mi^2 (5.13 km^2).

SURFACE AREA: 7 acres (28,000 m^2).

SURFACE ELEVATION: 140 ft (43 m) above mean sea level, from topographic map.

VOLUME: 30 acre-ft (37,000 m^3). (Information furnished by the Oregon State Engineer.)

INFLOW: No measurable flow from channel on north side of lake.

OUTFLOW: No flow observed over flashboard dam on south side of lake.

USE: No public recreation.

REMARKS: Water-rights certificate issued for storage of 30 acre-ft (37,000 m^3) and diversion of 0.63 ft^3/s (0.02 m^3/s) for irrigation.

Sampling site at lat 45°26'15", long 122°56'00", near dam.

Photograph taken November 4, 1974.

WATER-QUALITY DATA

SAMPLING TIME: 1100 hours
CLOUD COVER: 100 percent

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	2.8	19.3	7.1	246
BOTTOM	1.6	18.5	7.1	256

TRANSPARENCY (Metres) 1.1 COLOR (Pt-Co units) 35

LOCATION: Sec.2, T.1 N., R.4 W., about 2.5 mi (4 km) southwest of Banks and 6 mi (9.5 km) northwest of Forest Grove. Surface-water outlet at lat 45°35'45", long 123°09'15". Forest Grove 15-minute quadrangle map (not shown on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 0.31 mi^2 (0.80 km^2).

SURFACE AREA: 8 acres (32,000 m^2) at normal pool.

SURFACE ELEVATION: 200 ft (61 m) above mean sea level, from topographic map.

VOLUME: 48 acre-ft (59,000 m^3) at normal pool.

INFLOW: No flow observed from channel on north side of reservoir.

OUTFLOW: No flow observed through overflow pipe on south side of reservoir near the dam.

USE: No public recreation.

REMARKS: Water-rights certificate issued for storage of 48 acre-ft (59,000 m^3) and diversion of 1.63 ft^3/s (0.05 m^3/s) for irrigation.

Information on bathymetry, surface area, and volume furnished by the Oregon State Engineer.

Photograph taken August 1, 1974.

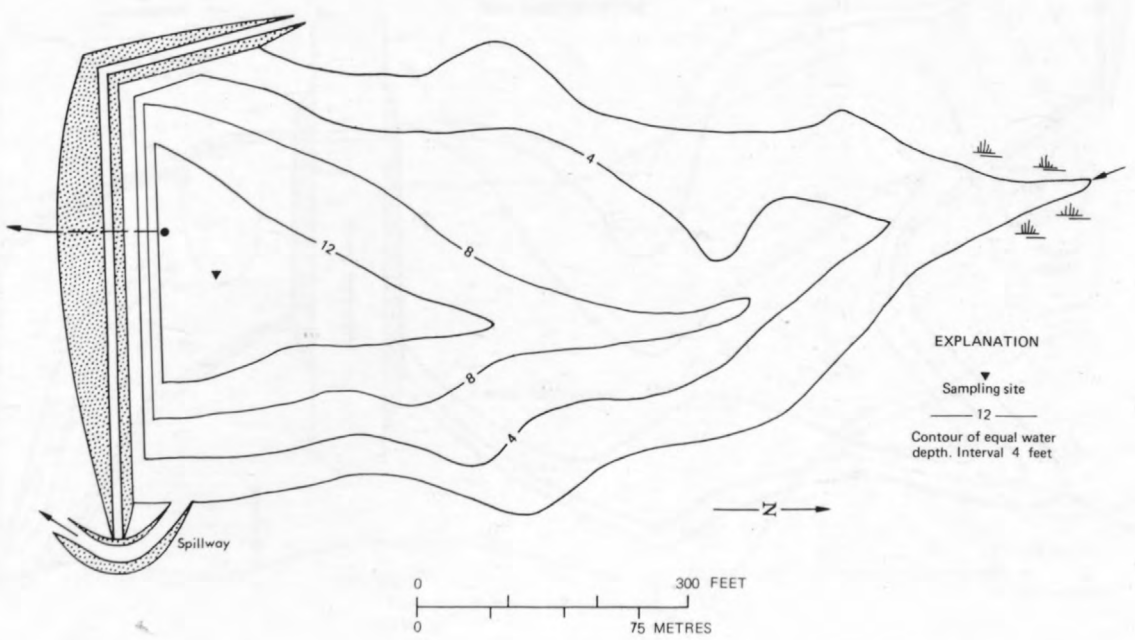
WATER-QUALITY DATA

SAMPLING TIME: 1200 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.2	26.0	7.0	61
BOTTOM	1.2	21.5	6.3	66

TRANSPARENCY (Metres) -- COLOR (Pt-Co units) 15

BATHYMETRIC MAP



LOCATION: Sec.33, T.1 S., R.1 W., about 2 mi (3 km) west of Tigard and 3 mi (5 km) south of Beaverton. Surface-water outlet at lat 45°26'17", long 122°48'16". Beaverton 7½-minute quadrangle map, photorevised 1970 (not named on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 4.62 mi^2 (12.0 km^2).

SURFACE AREA: 10 acres (40,000 m^2) at maximum pool.

SURFACE ELEVATION: 170 ft (52 m) above mean sea level, from topographic map.

VOLUME: 36 acre-ft (44,000 m^3) at maximum pool.

INFLOW: No measurable flow through channels on west and southwest sides of reservoir.

OUTFLOW: No measurable flow to channel on east side of reservoir.

USE: No public recreation.

REMARKS: The entire reservoir was covered with floating aquatic vegetation on the survey date.

A dirt landing strip divides the lake into two sections.

Water-rights certificate issued for storage of 23 acre-ft (28,000 m^3) for irrigation and recreation.

Information on bathymetry, surface area, and volume furnished by the Oregon State Engineer.

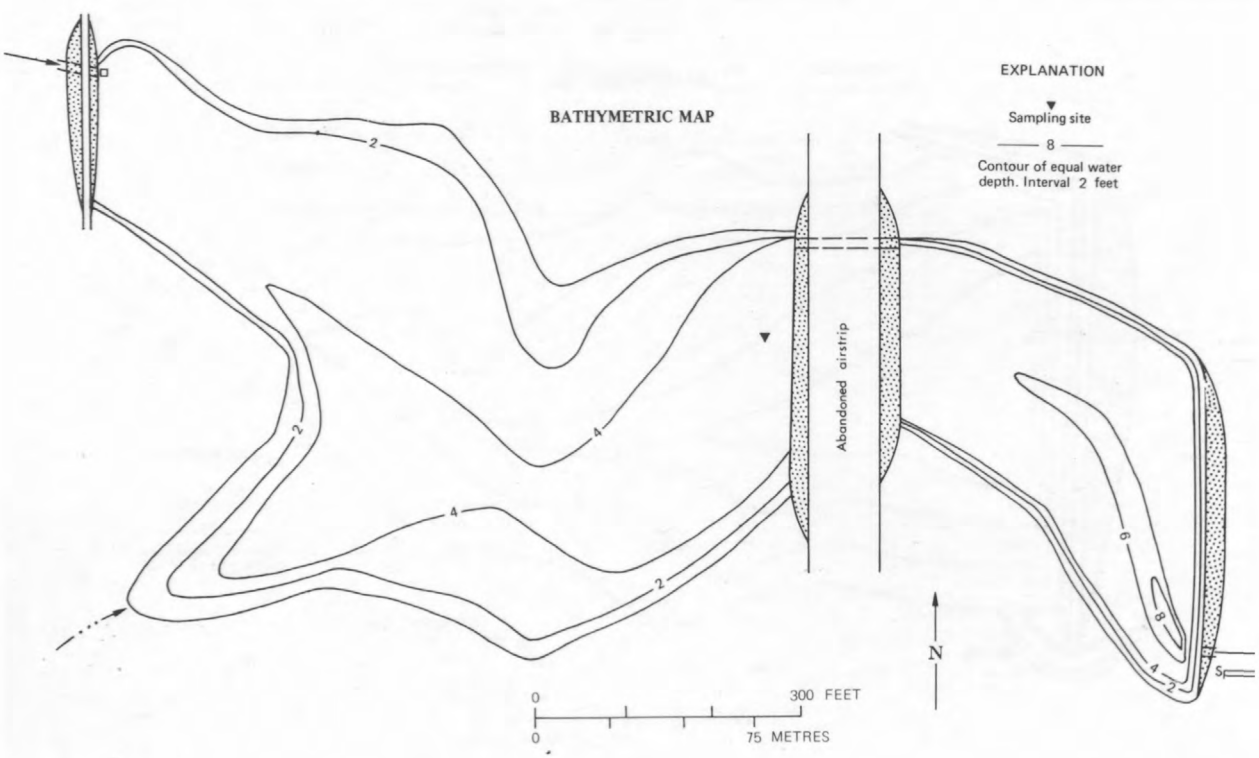
Photograph taken November 4, 1974.

WATER-QUALITY DATA

SAMPLING TIME: 1030 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	1.8	19.5	8.9	168
BOTTOM	--	--	--	--

TRANSPARENCY (Metres) -- COLOR (Pt-Co units) 20



LOCATION: Secs.21 and 28, T.1 S., R.4 W., about 3 mi (5 km) northwest of Gaston and 6 mi (10 km) southwest of Forest Grove. Southernmost tip of pond at lat 45°27'46", long 123°11'15". Gaston 7½-minute quadrangle map (not named on map).

DRAINAGE BASIN: Tualatin River (Willamette River)..

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 50 acres (200,000 m^2).

SURFACE ELEVATION: 210 ft (64 m) above mean sea level, from topographic map.

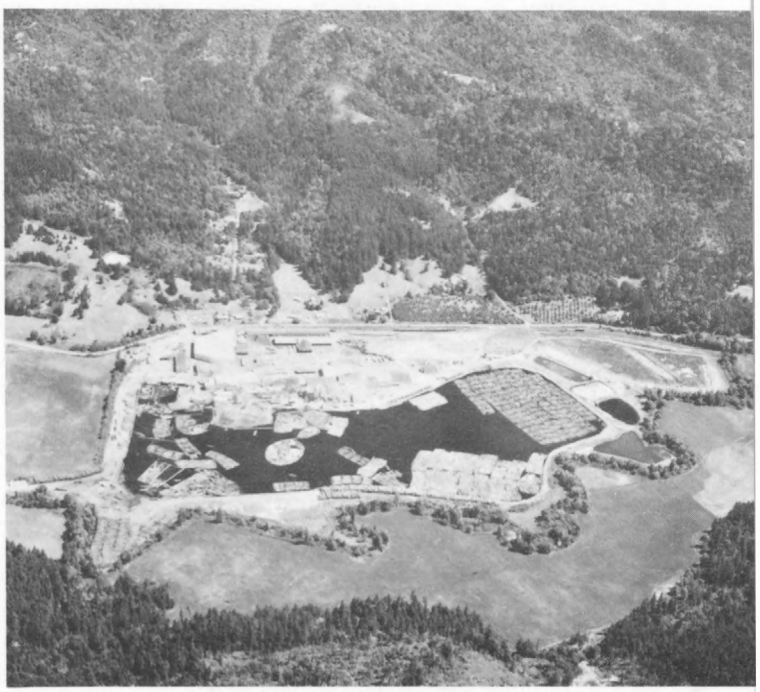
VOLUME: 250 acre-ft (310,000 m^3).

INFLOW: Diverted from Scoggins Creek.

OUTFLOW: No outflow. The mill maintains a closed water system through the use of settling ponds.

USE: No recreational use.

REMARKS: The color value indicates a high level of organic enrichment. The large accumulation of organic material, mostly decaying logs and bark, rapidly depletes the dissolved oxygen in the pond.



Photograph taken August 1, 1974.

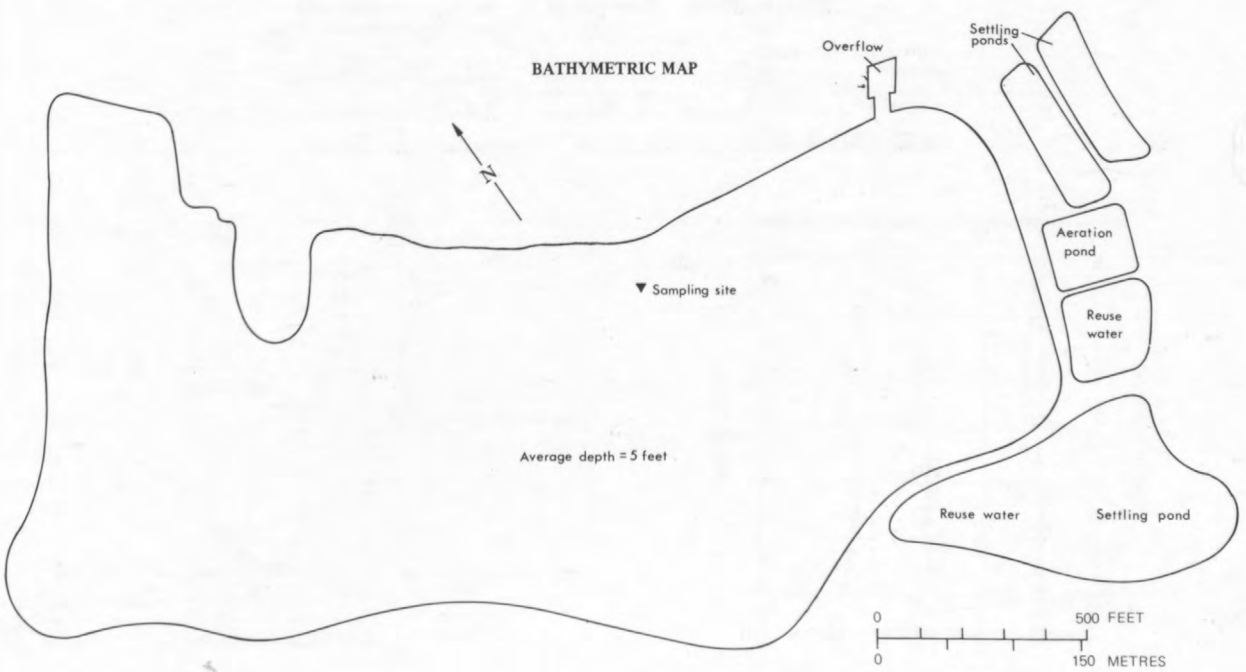
WATER-QUALITY DATA

SAMPLING TIME: 1200 hours
CLOUD COVER: 100 percent

	DISSOLVED OXYGEN (mg/1)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	0.6	20.5	6.3	158
BOTTOM	.5	20.3	6.3	161

TRANSPARENCY (Metres) < 0.05 COLOR (Pt-Co units) 120

BATHYMETRIC MAP



LOCATION: Sec.7, T.1 N., R.2 W., just east of North Plains and about 4.5 mi (7 km) north of Hillsboro. Southernmost tip of pond at lat 45°35'15", long 122°58'58". Hillsboro 7½-minute quadrangle map (not named on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 15 acres (61,000 m^2).

SURFACE ELEVATION: 150 ft (46 m) above mean sea level, from topographic map.

VOLUME: 40 acre-ft (49,000 m^3). (Information furnished by the Oregon State Engineer.)

INFLOW: Diverted from McKay Creek.

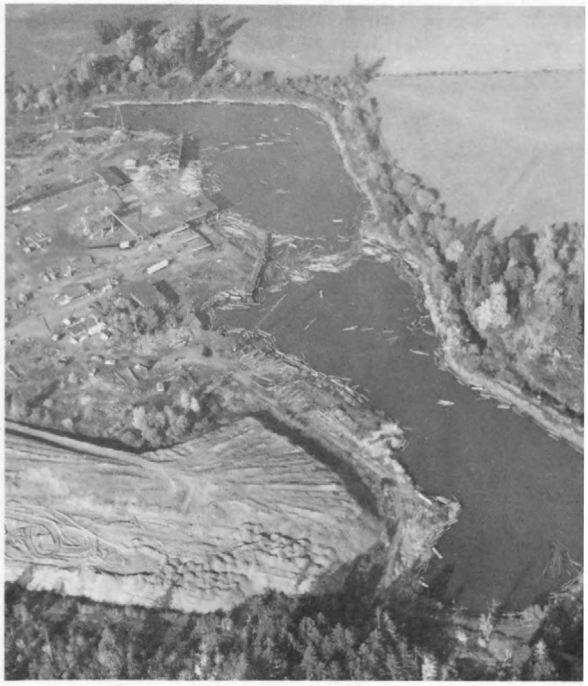
OUTFLOW: No channels observed and none indicated on topographic map.

USE: No recreational use.

REMARKS: Large amounts of submerged aquatic vegetation were observed.

Water-rights certificate issued for storage of 40 acre-ft (49,000 m^3) for log storage. Use certificate issued for diversion of 0.5 ft^3/s (0.01 m^3/s) from McKay Creek to maintain the pond.

Sampling site at lat 45°35'20", long 122°59'00".



Photograph taken November 4, 1974.

WATER-QUALITY DATA

SAMPLING TIME: 1500 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	3.4	28.5	7.4	102
BOTTOM (4')	2.2	26.0	6.9	103

TRANSPARENCY (Metres) -- COLOR (Pt-Co units) 35

LOCATION: Sec.31, T.1 N., R.1 W., about 2 mi (3 km) north of Aloha and 9 mi (14 km) west of Portland city center. Surface-water outlet at lat 45°31'57", long 122°51'57". Linnton 7½-minute quadrangle map, photorevised 1970 (not named or shown complete on the map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 4.18 mi^2 (10.83 km^2).

SURFACE AREA: 8 acres (32,000 m^2).

SURFACE ELEVATION: 170 ft (52 m) above mean sea level, from topographic map.

VOLUME: 15 acre-ft (18,000 m^3).

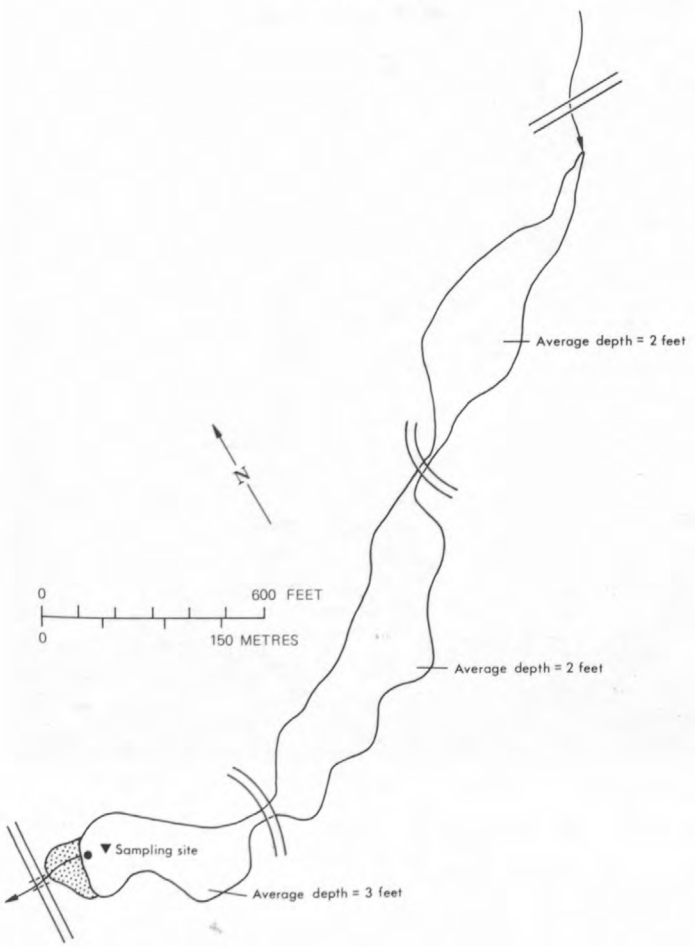
INFLOW: No flow observed in Bronson Creek on northeast side of lake. Well water is used to maintain the lake during summer.

OUTFLOW: Estimated less than 1 ft^3/s (0.03 m^3/s) over dam on west end of lake.

USE: No public recreation.

REMARKS: The highly mineralized water was supplied by a deep well used to maintain the lake during low-water periods. Water-rights certificate issued for storage of 15 acre-ft (18,000 m^3) for recreation.

BATHYMETRIC MAP



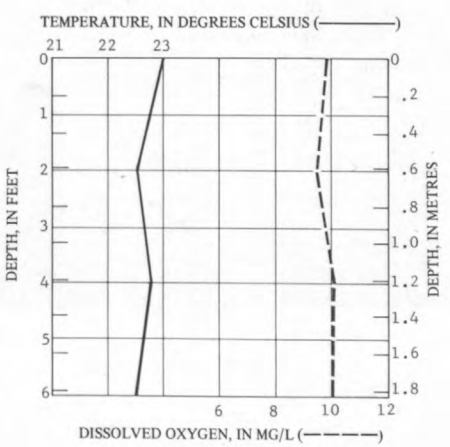
WATER-QUALITY DATA

SAMPLING TIME: 1130 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	8.2	15,500
BOTTOM	8.2	--

ALKALINITY (mg/l as $CaCO_3$)	31
TOTAL HARDNESS (mg/l as $CaCO_3$)	5,000
DISSOLVED SOLIDS (mg/l)	8,770*
TRANSPARENCY (metres)	.6
COLOR (Pt-Co units)	5
FECAL COLIFORM (colonies/100 ml)	20
SILICA (SiO_2) (mg/l)	24
IRON (Fe) (ug/l)	40
CALCIUM (Ca) (mg/l)	1,800
MAGNESIUM (Mg) (mg/l)	120
SODIUM (Na) (mg/l)	1,100
POTASSIUM (K) (mg/l)	94
BICARBONATE (HCO_3) (mg/l)	37
CARBONATE (CO_3) (mg/l)	0
SULFATE (SO_4) (mg/l)	17
CHLORIDE (Cl) (mg/l)	5,600
FLUORIDE (F) (mg/l)	.2
NITRITE+NITRATE (as N) (mg/l)	.21
ORTHOPHOSPHORUS (as P) (mg/l)	--

*Sum of constituents.



Photograph taken November 4, 1974.

LOCATION: Secs.7 and 18, T.1 N., R.3 W., about 2.5 mi (4 km) south of Banks and 4 mi (6.5 km) north of Forest Grove. Surface-water outlet at lat 45°34'36", long 123°05'41". Forest Grove 7½-minute quadrangle map (not shown on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 20 acres (81,000 m^2).

SURFACE ELEVATION: 160 ft (49 m) above mean sea level, from topographic map.

VOLUME: 70 acre-ft (86,000 m^3).

INFLOW: No flow observed in channel on the northwest end and no measurable flow through channel on southwest end of reservoir.

OUTFLOW: No measurable flow through channel to West Fork Dairy Creek on southeast side of reservoir.

USE: No public recreation.

REMARKS: Large amounts of submerged aquatic vegetation were observed on the survey date.

Water-rights certificate issued for storage of 66.24 acre-ft (81,670 m^3) for irrigation.

Information on bathymetry, surface area, and volume furnished by the Oregon State Engineer.

Photograph taken August 1, 1974.

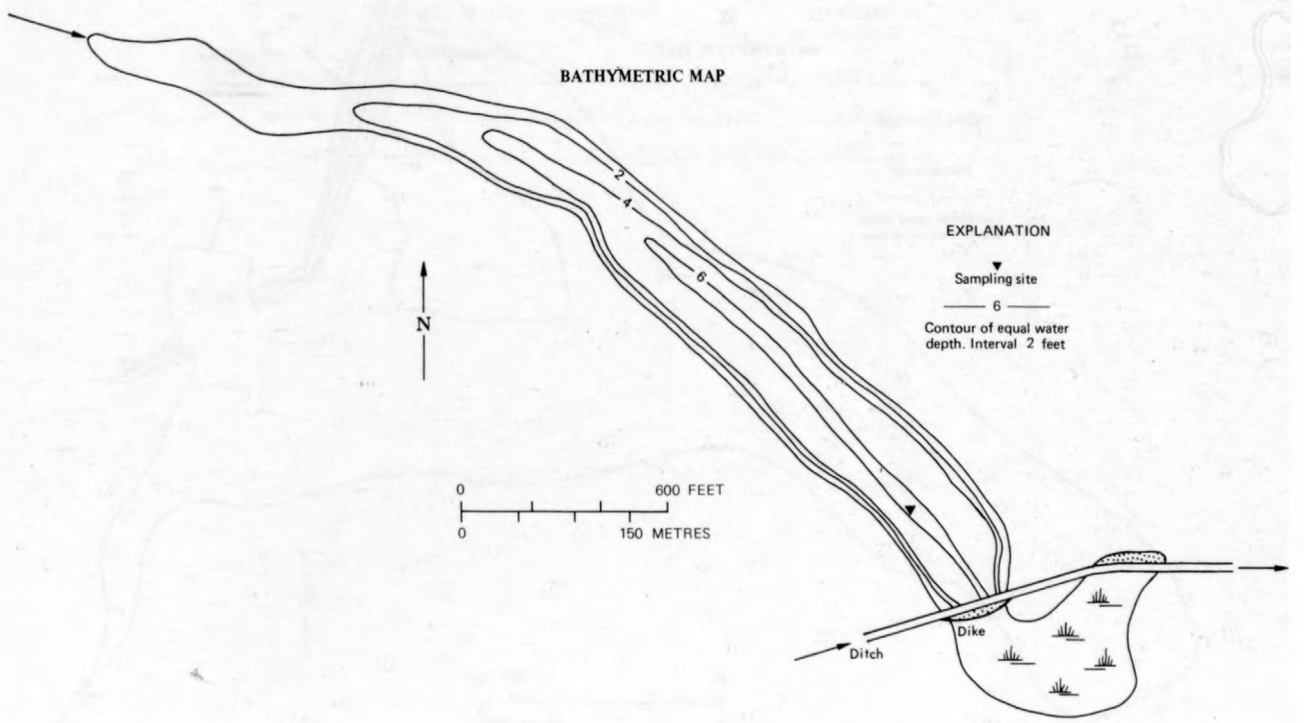
WATER-QUALITY DATA

SAMPLING TIME: 0945 hours
CLOUD COVER: 5 percent

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	6.5	18.3	7.7	89
BOTTOM	6.0	18.0	7.7	89

TRANSPARENCY (Metres) 0.1 COLOR (Pt-Co units) 30

BATHYMETRIC MAP



LOCATION: Sec.24, T.1 S., R.3 W., about 3.5 mi (5.5 km) southwest of Hillsboro and 5 mi (8 km) northeast of Laurelwood. Surface-water outlet at lat 45°28'20", long 123°00'15". Laurelwood 7½-minute quadrangle map, photorevised 1970 (not named on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 0.87 mi^2 (2.25 km^2).

SURFACE AREA: 10 acres (40,000 m^2).

SURFACE ELEVATION: 170 ft (52 m) above mean sea level, from topographic map.

VOLUME: 35 acre-ft (43,000 m^3).

INFLOW: No flow observed in channel on southwest side of lake.

OUTFLOW: No flow observed in channel on northeast side of lake.

USE: No public recreation.

REMARKS: Water-rights permit issued for diversion of 0.61 ft^3/s (0.02 m^3/s) for irrigation.
Information on bathymetry, surface area, and volume furnished by the Oregon State Engineer.

Photograph taken August 1, 1974.

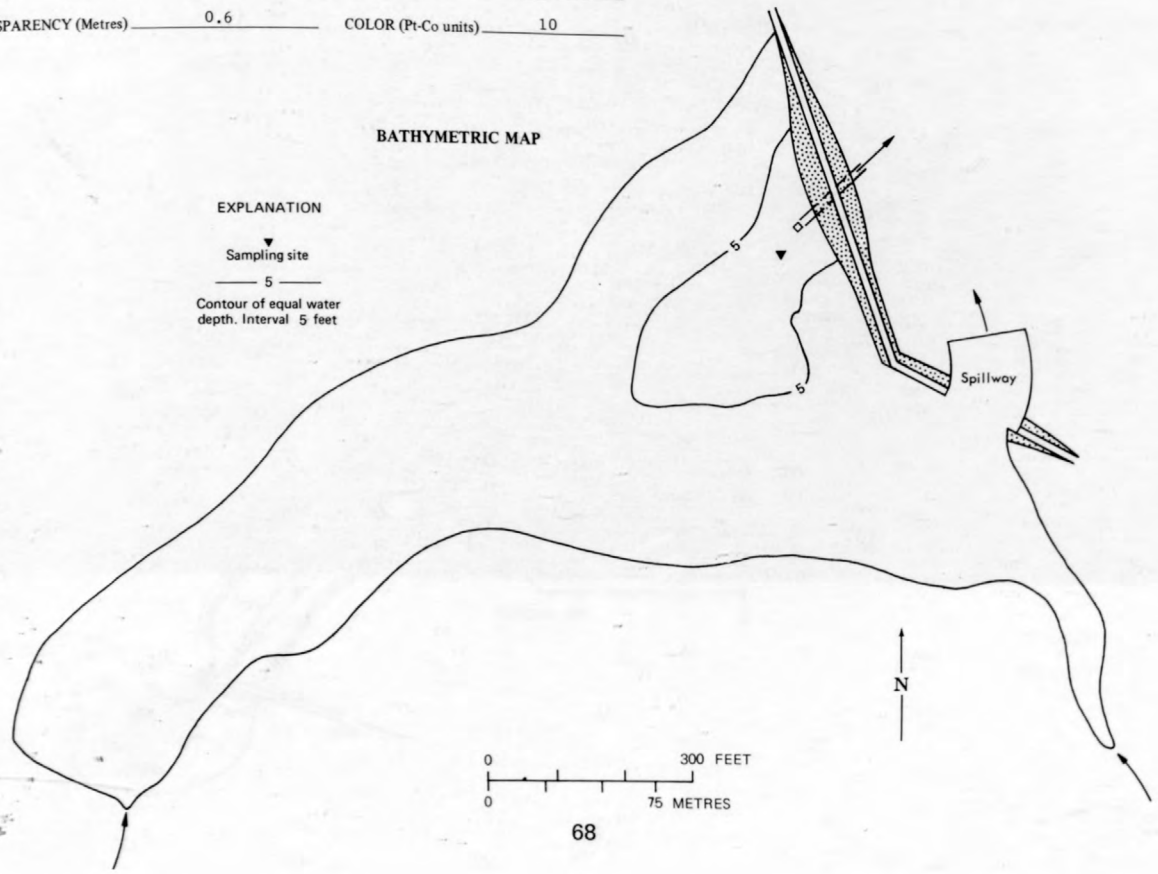
WATER-QUALITY DATA

SAMPLING TIME: 1400 hours
CLOUD COVER: 50 percent

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	11.0	20.0	8.6	111
BOTTOM	10.8	19.3	8.5	112

TRANSPARENCY (Metres) 0.6 COLOR (Pt-Co units) 10

BATHYMETRIC MAP



LOCATION: Secs. 19 and 30, T.1 S., R.2 W., and sec.24, T.1 S., R.3 W., about 2 mi (3 km) northwest of Farmington and 4 mi (6.5 km) south of Hillsboro. Surface-water outlet at lat 45°27'52", long 122°59'23". Scholls 7½-minute quadrangle map.

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 0.10 mi^2 (0.26 km^2).

SURFACE AREA: 10 acres (40,000 m^2).

SURFACE ELEVATION: 154 ft (47 m) above mean sea level, from topographic map.

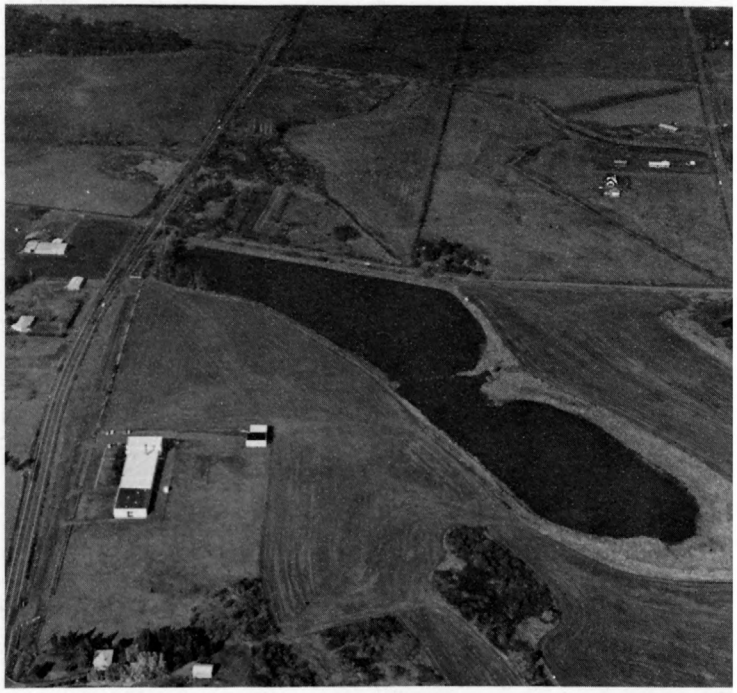
VOLUME: Not determined.

INFLOW: No channels observed and none indicated on topographic map.

OUTFLOW: No flow observed through overflow tube on north end of reservoir near dam.

USE: No public recreation.

REMARKS: Water-rights certificate issued for diversion of 0.22 ft^3/s (0.01 m^3/s) for irrigation.
Sampling site at the outlet.



Photograph taken November 4, 1974.

WATER-QUALITY DATA

SAMPLING TIME: 1330 hours
CLOUD COVER: None

		DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE		6.0	24.8	8.1	230
BOTTOM	(5')	3.2	22.0	7.5	210

TRANSPARENCY (Metres) -- COLOR (Pt-Co units) 30

LOCATION: Sec.21, T.1 S., R.3 W., about 3.5 mi (5.5 km) north of Laurelwood and 3.5 mi (5.5 km) south of Cornelius. Surface-water outlet at lat 45°28'31", long 123°03'18". Laurelwood 7½-minute quadrangle map, photorevised 1970 (not named on map).

DRAINAGE BASIN: Tualatin River (Willamette River).

DRAINAGE AREA: 1.01 mi^2 (2.62 km^2).

SURFACE AREA: 20 acres (81,000 m^2) at normal pool.

SURFACE ELEVATION: 178 ft (54 m) above mean sea level, at normal pool.

VOLUME: 132 acre-ft (163,000 m^3) at normal pool.

INFLOW: No measurable flow through channels on south and southwest side of reservoir.

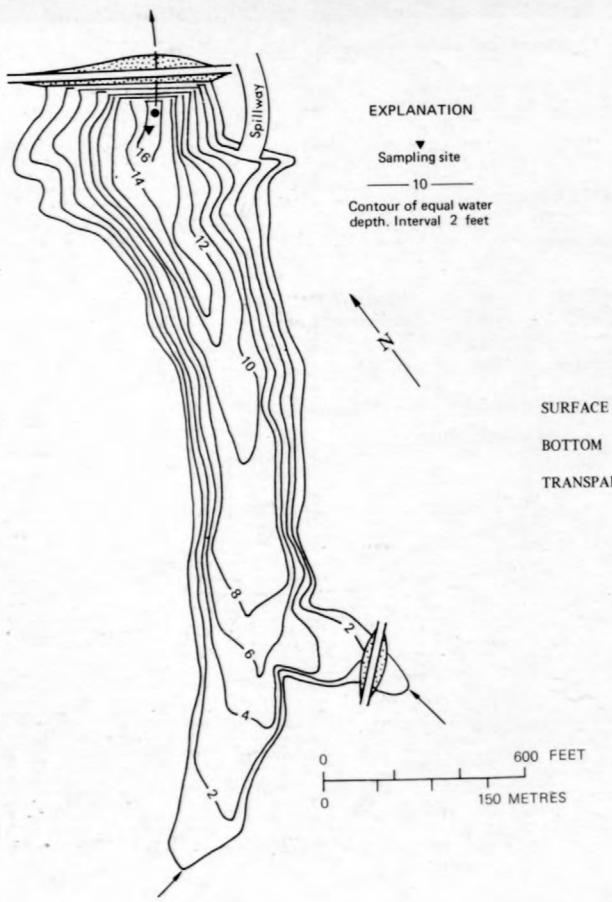
OUTFLOW: No flow observed through overflow tube on north end of reservoir near dam.

USE: No public recreation.

REMARKS: Water-rights permit issued for storage of 132 acre-ft (163,000 m^3) for irrigation.
Information on bathymetry, surface area, elevation, and volume furnished by the Oregon State Engineer.

Photograph taken August 1, 1974.

BATHYMETRIC MAP



WATER-QUALITY DATA

SAMPLING TIME: 1500 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	14.0	27.0	10.0	120
BOTTOM	.2	17.5	6.9	278

TRANSPARENCY (Metres) -- COLOR (Pt-Co units) --

Yamhill County

Lakes of Yamhill County

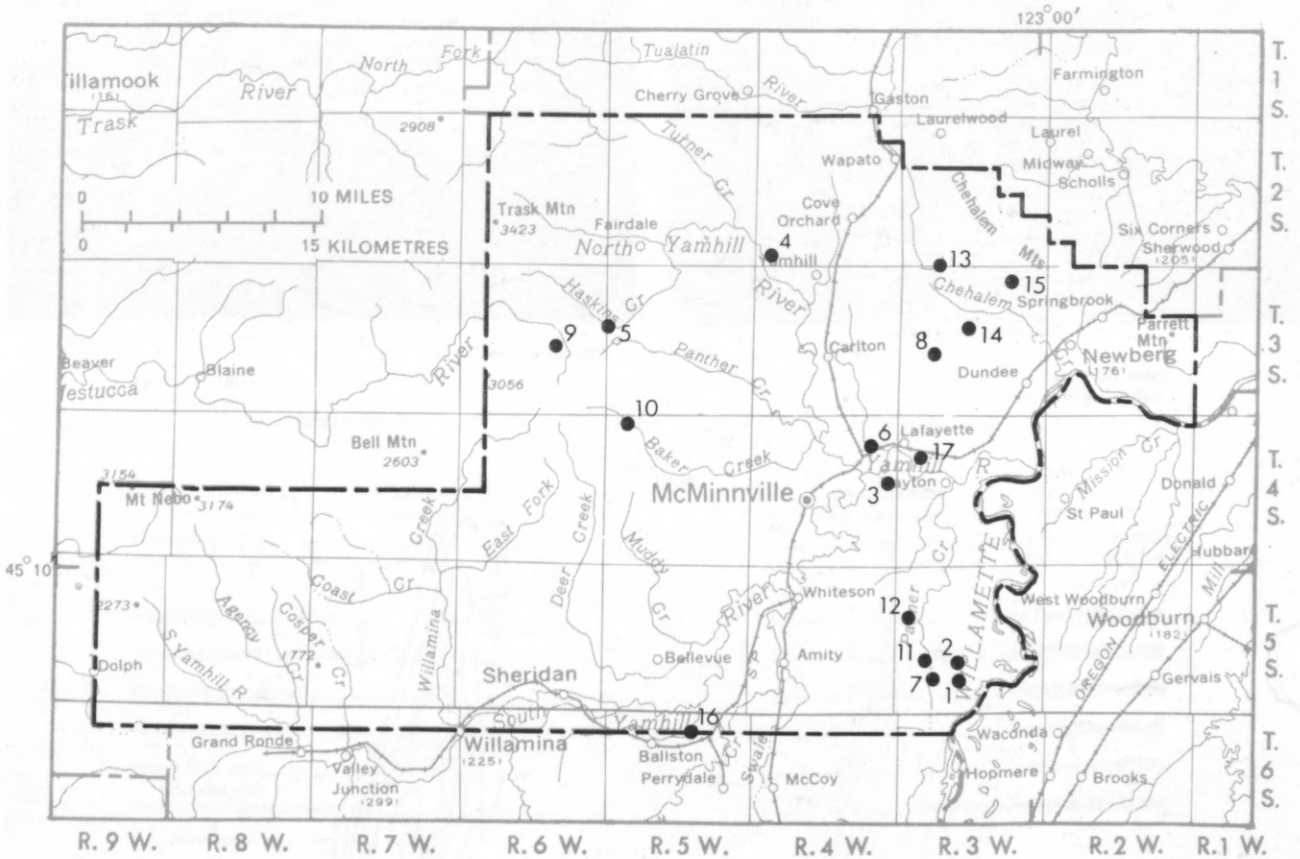


Figure 7.—Locations and identification numbers of lakes in Yamhill County.

LOCATION: Sec.28, T.5 S., R.3 W., about 2 mi (3 km) northeast of Hopewell and 10 mi (16 km) southeast of McMinnville. Southernmost tip of lake at lat 45°06'14", long 123°03'25". Mission Bottom 7½-minute quadrangle map.

DRAINAGE BASIN: Willamette River (noncontributing).

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 8 acres (32,000 m^2).

SURFACE ELEVATION: 90 ft (27 m) above mean sea level, from topographic map.

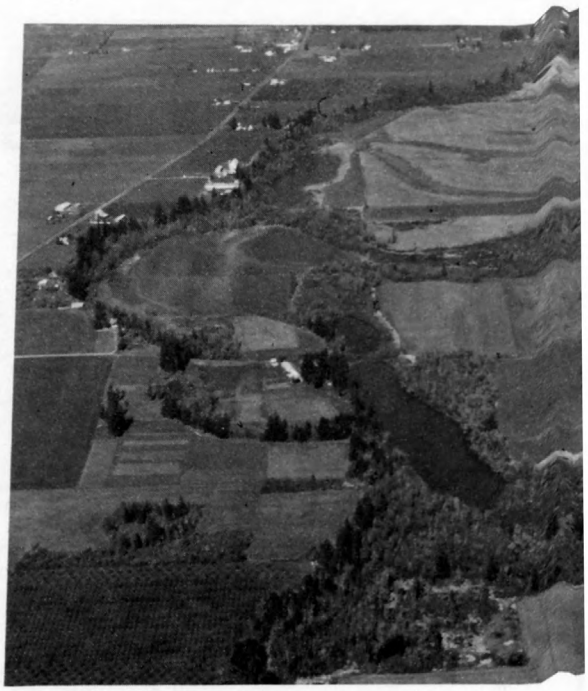
VOLUME: 60 acre-ft (74,000 m^3).

INFLOW: No channels observed and none indicated on topographic map.

OUTFLOW: No channels observed and none indicated on topographic map.

USE: No public recreation.

REMARKS: The lake has been used commercially to develop aquatic plants. Lily pads covered about 20 percent of the water surface, and there was some submerged growth in the lake. Water-rights certificate issued for diversion of 3.16 ft^3/s (0.09 m^3/s) from the lake for irrigation.



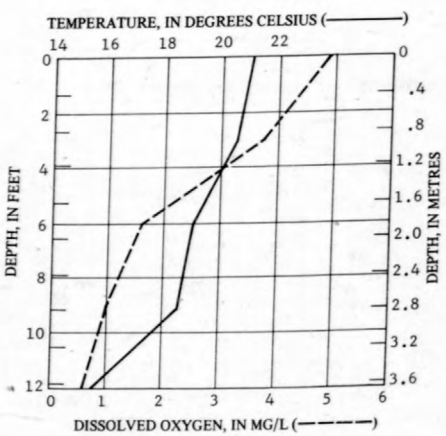
Photograph taken March 5, 1975.

WATER-QUALITY DATA

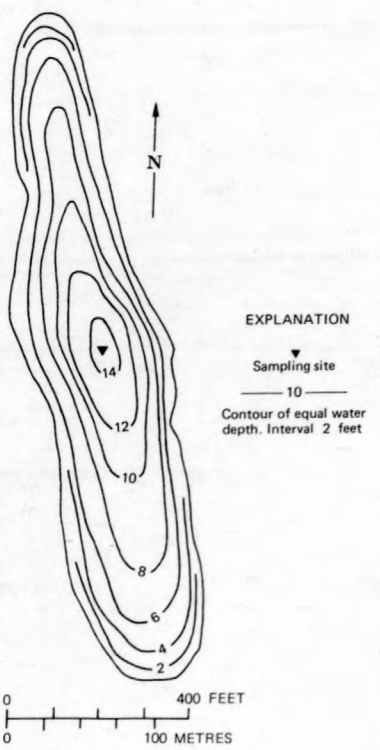
SAMPLING TIME: 1415 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.2	231
BOTTOM	6.5	317

ALKALINITY (mg/l as $CaCO_3$)	127
TOTAL HARDNESS (mg/l as $CaCO_3$)	110
DISSOLVED SOLIDS (mg/l)	151
TRANSPARENCY (metres)	1.4
COLOR (Pt-Co units)	15
FECAL COLIFORM (colonies/100 ml)	5



BATHYMETRIC MAP



LOCATION: Sec.21, T.5 S., R.3 W., about 7 mi (11 km) south of Dayton and 10 mi (16 km) southeast of McMinnville. Surface-water outlet at lat 45 07'08", long 123 03'32". Mission Bottom 7½-minute quadrangle map.

DRAINAGE BASIN: Willamette River (noncontributing).

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 7 acres (28,000 m^2).

SURFACE ELEVATION: 90 ft (27 m) above mean sea level, from topographic map.

VOLUME: 35 acre-ft (43,000 m^3).

INFLOW: No channels observed and none indicated on topographic map.

OUTFLOW: No measurable flow through channel on north end of lake to Lambert Slough.

USE: No public recreation.

REMARKS: On the survey date, lily pads covered about 10 percent of the lake surface, and there was also some bottom vegetation.

Bottom material is mostly soft mud.

Water-rights certificate issued for diversion of 0.35 ft^3/s (0.01 m^3/s) from lake for irrigation.

Photograph taken March 5, 1975.

WATER-QUALITY DATA

SAMPLING TIME: 1100 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	9.1	232
BOTTOM	9.1	238

ALKALINITY (mg/l as $CaCO_3$) 126

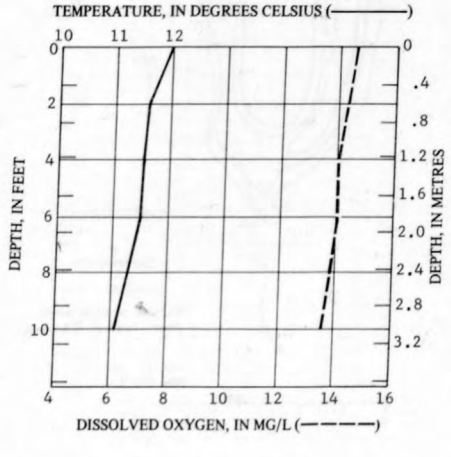
TOTAL HARDNESS (mg/l as $CaCO_3$) 100

DISSOLVED SOLIDS (mg/l) 149

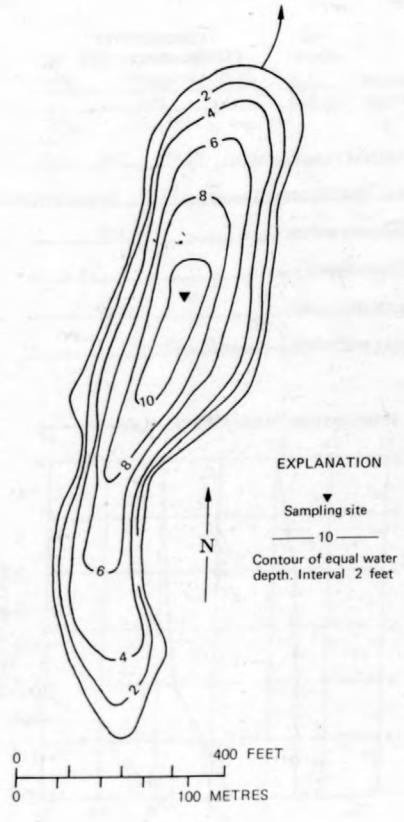
TRANSPARENCY (metres) .4

COLOR (Pt-Co units) 50

FECAL COLIFORM (colonies/100 ml) 8



BATHYMETRIC MAP



LOCATION: Sec.13, T.4 S., R.4 W., about 1.5 mi (2.5 km) south of Lafayette and 2 mi (3 km) west of Dayton. Southernmost tip of lake at lat 45°13'12", long 123°07'04". Dayton 7½-minute quadrangle map, photorevised 1970 (not named on map).

DRAINAGE BASIN: Yamhill River (Willamette River).

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 20 acres (81,000 m^2).

SURFACE ELEVATION: 85 ft (26 m) above mean sea level, from topographic map.

VOLUME: 80 acre-ft (99,000 m^3).

INFLOW: No channels observed and none indicated on topographic map. (See Remarks.)

OUTFLOW: No measurable flow in channel on south side of lake. (See Remarks.)

USE: No public recreation.

REMARKS: There was a large amount of nonemergent bottom vegetation on the survey date. Bottom material is mostly mud and detritus.

This oxbow lake once formed a loop of the meandering Yamhill River.

Water may enter or leave the lake either by way of the Yamhill River or by way of the unnamed stream south of the lake.

Photograph taken March 5, 1975.

WATER-QUALITY DATA

SAMPLING TIME: 1000 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.3	201
BOTTOM	7.3	205

ALKALINITY (mg/l as $CaCO_3$) 125

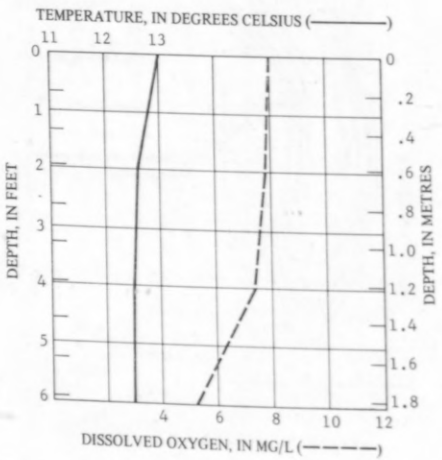
TOTAL HARDNESS (mg/l as $CaCO_3$) 97

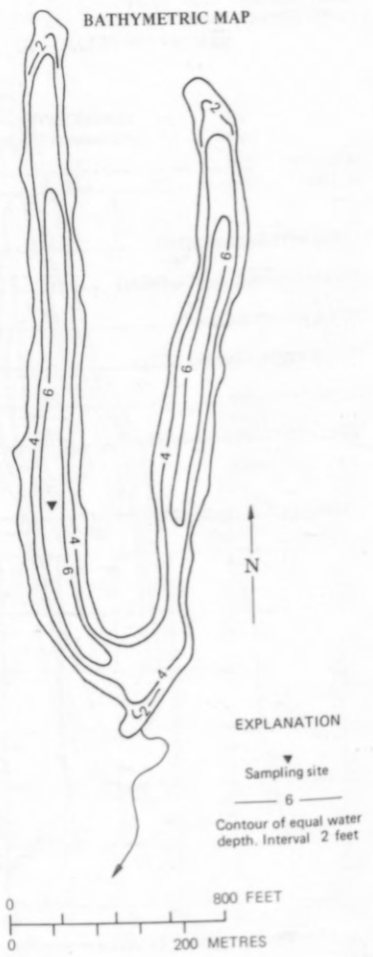
DISSOLVED SOLIDS (mg/l) 150

TRANSPARENCY (metres) .4

COLOR (Pt-Co units) 50

FECAL COLIFORM (colonies/100 ml) 7





LOCATION: Sec.31, T.2 S., R.4 W., about 2 mi (3 km) northwest of Yamhill and 10 mi (16 km) north of McMinnville. Surface-water outlet at lat 45°21'22", long 123°13'03". Carlton 7½-minute quadrangle map, photorevised 1970 (not named on map).

DRAINAGE BASIN: Yamhill River (Willamette River).

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 10 acres (40,000 m^2) at normal pool.

SURFACE ELEVATION: 210 ft (64 m) above mean sea level, from topographic map. Water surface was about 10 ft (3 m) below normal on the survey date.

VOLUME: 100 acre-ft (123,000 m^3) at normal pool.

INFLOW: Diverted from Salt Creek on east side of reservoir.

OUTFLOW: Through control valve to Salt Creek on southeast corner of reservoir.

USE: No public recreation.

REMARKS: Water-rights certificate issued for storage of 100 acre-ft (123,000 m^3) and diversion of 3.48 ft^3/s (0.10 m^3/s) for irrigation.
Information on surface area and volume furnished by the Oregon State Engineer.

Photograph taken March 5, 1975.

WATER-QUALITY DATA

SAMPLING TIME: 1330 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	6.3	21.0	7.6	98
BOTTOM	5.9	19.0	7.4	98

TRANSPARENCY (Metres) 0.3 COLOR (Pt-Co units) 90

LOCATION: Sec.13, T.3 S., R.6 W., and sec.18, T.3 S., R.5 W., about 6.5 mi (10.5 km) southwest of Pike and 11 mi (18 km) northwest of McMinnville. Surface-water outlet at lat 45°18'40", long 123°21'20". Fairdale 15-minute quadrangle map.

DRAINAGE BASIN: Yamhill River (Willamette River).

DRAINAGE AREA: 6.88 mi^2 (17.8 km^2).

SURFACE AREA: 32 acres (129,500 m^2) at spillway crest.

SURFACE ELEVATION: 835 ft (254 m) above mean sea level, at spillway crest.

VOLUME: 733 acre-ft (904,000 m^3) at spillway crest.

INFLOW: 16 ft^3/s (0.45 m^3/s) from Haskins Creek on northwest end of reservoir. (Information furnished by the city of McMinnville.) Idlewild Creek on the west and an unnamed creek on the north also contribute to the lake.

OUTFLOW: Daily mean discharge on survey date was 4.1 ft^3/s (0.12 m^3/s) at Haskins Creek gaging station (14-1955.00) 800 ft (244 m) downstream from dam and a diversion; 12.8 ft^3/s (0.36 m^3/s) was diverted from the dam to the McMinnville water system.

USE: No recreational use.

REMARKS: No evidence of either floating or submerged aquatic growth. The reservoir, which is drained every winter, is formed by an earth-fill dam equipped with five siphon spillways.

Water-rights permit issued to city of McMinnville for diversion of 19.5 ft^3/s (0.55 m^3/s) for municipal water supply.

Bathymetry furnished by the Oregon State Engineer. Reference: 15.

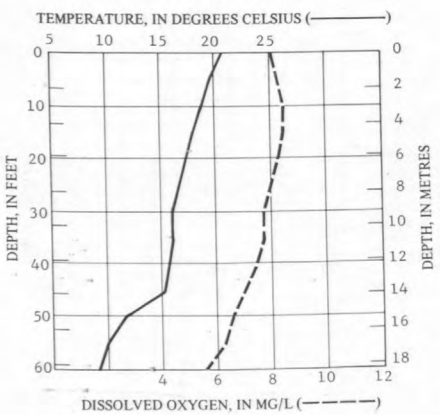
Photograph taken August 1, 1974.

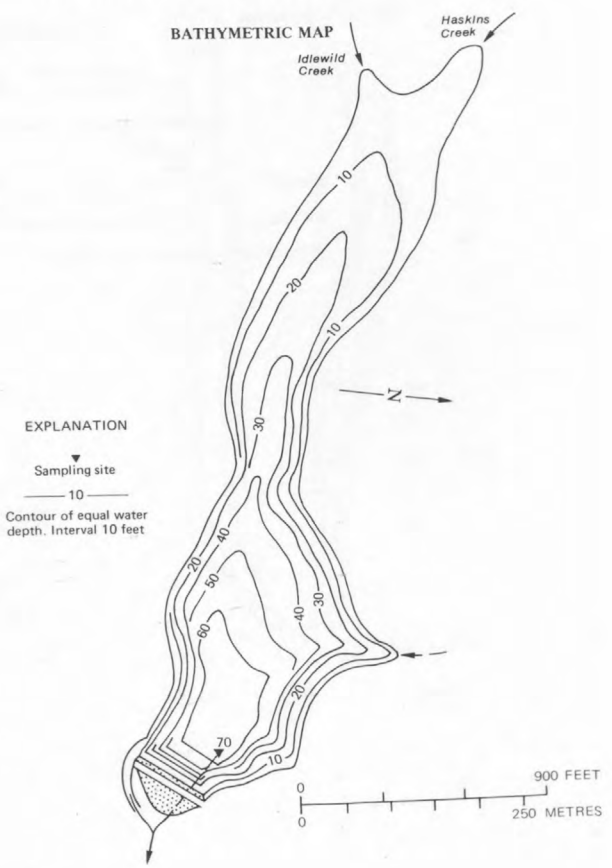
WATER-QUALITY DATA

SAMPLING TIME: 1100 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.5	57
BOTTOM	7.5	68

ALKALINITY (mg/l as $CaCO_3$)	33
TOTAL HARDNESS (mg/l as $CaCO_3$)	21
DISSOLVED SOLIDS (mg/l)	47
TRANSPARENCY (metres)	--
COLOR (Pt-Co units)	0
FECAL COLIFORM (colonies/100 ml)	0





LOCATION: Secs.2 and 11, T.4 S., R.4 W., about 3 mi (5 km) northeast of McMinnville and 4 mi (6 km) southeast of Carlton. Surface-water outlet at lat 45°14'36", long 123°08'28". McMinnville 7½-minute quadrangle map, photorevised (not named on map).

DRAINAGE BASIN: Yamhill River (Willamette River).

DRAINAGE AREA: 12.1 mi^2 (31.3 km^2).

SURFACE AREA: 30 acres (120,000 m^2).

SURFACE ELEVATION: 100 ft (30 m) above mean sea level, from topographic map.

VOLUME: 150 acre-ft (185,000 m^3).

INFLOW: Hawn Creek on north end of reservoir.

OUTFLOW: No measurable flow to Hawn Creek on east end of lake.

USE: No public recreation.

REMARKS: Water-rights certificate issued for storage of 153 acre-ft (189,000 m^3) and diversion of 2.67 ft^3/s (0.08 m^3/s) for irrigation.

Bathymetry and information on volume furnished by the Oregon State Engineer.

Photograph taken March 5, 1975.

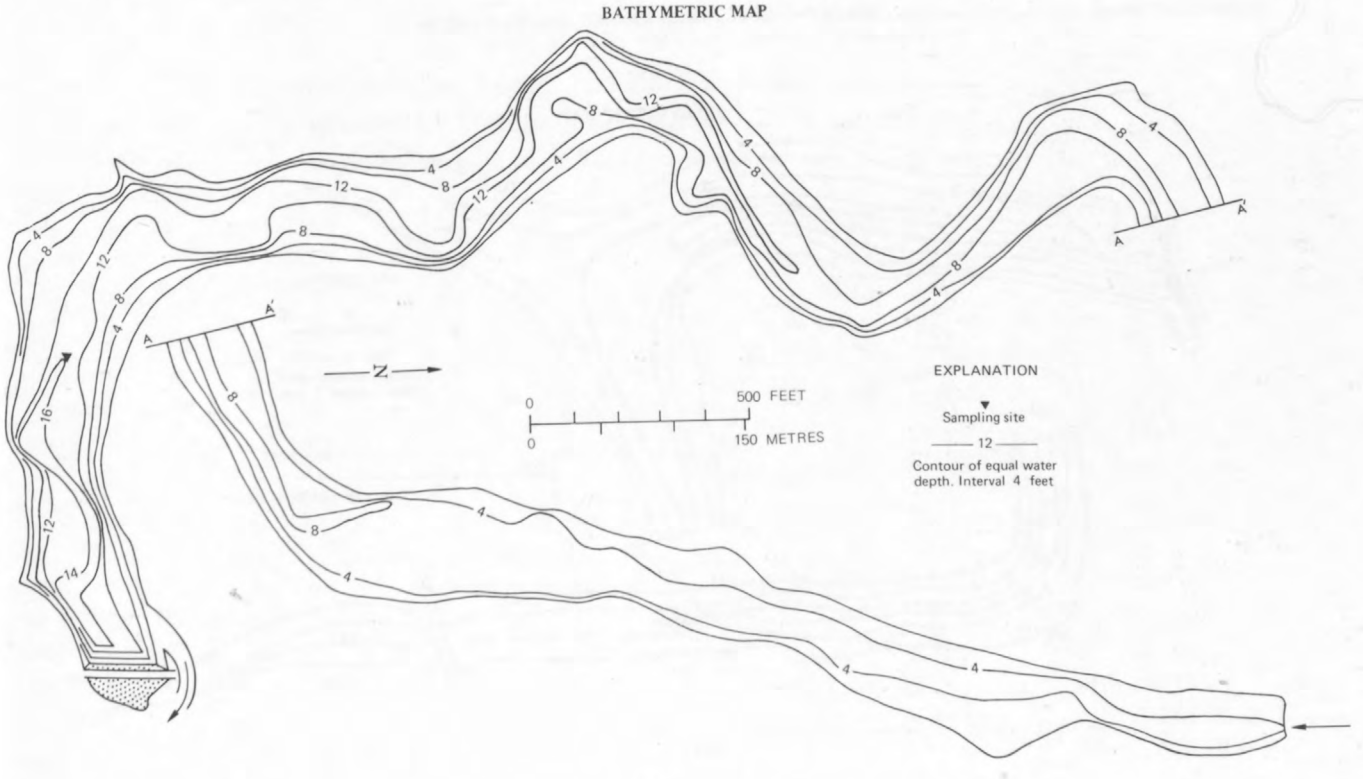
WATER-QUALITY DATA

SAMPLING TIME: 1100 hours
CLOUD COVER: 100 percent

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	6.0	19.8	7.0	228
BOTTOM	4.5	19.3	6.8	230

TRANSPARENCY (Metres) 1.1 COLOR (Pt-Co units) 20

BATHYMETRIC MAP



LOCATION: Sec.29, T.5 S., R.3 W., about 1 mi (1.6 km) north of Hopewell and 9 mi (14 km) southeast of McMinnville. Surface-water outlet at lat 45°06'41", long 123°05'09". Mission Bottom 7½-minute quadrangle map, photorevised 1970 (not named on map).

DRAINAGE BASIN: Yamhill River (Willamette River).

DRAINAGE AREA: Indeterminate.

SURFACE AREA: 13 acres (53,000 m^2).

SURFACE ELEVATION: 140 ft (43 m) above mean sea level, from topographic map.

VOLUME: 44 acre-ft (54,000 m^3).

INFLOW: No measurable flow from channel on south end of reservoir. Willamette River water is diverted into the channel to supplement the natural drainage.

OUTFLOW: No measurable flow to channel on north side of reservoir.

USE: No public recreation.

REMARKS: There were large amounts of submerged and floating aquatic growth on the survey date. There are also many snags in the reservoir.

Water-rights certificate issued for storage of 38 acre-ft (47,000 m^3) and diversion of 3.32 ft^3/s (0.09 m^3/s) for irrigation.

Information on surface area, volume, and bathymetry furnished by the Oregon State Engineer.

Photograph taken March 5, 1975.

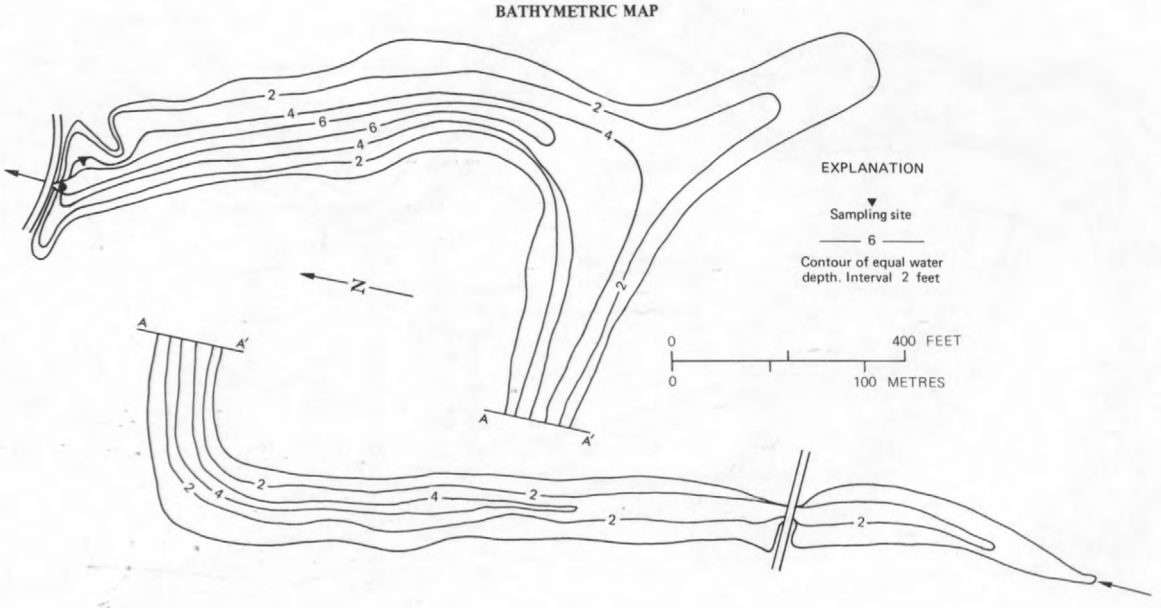
WATER-QUALITY DATA

SAMPLING TIME: 1115 hours
CLOUD COVER: 95 percent

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	3.0	18.2	6.9	77
BOTTOM	2.2	17.2	6.6	81

TRANSPARENCY (Metres) 1.5 COLOR (Pt-Co units) 10

BATHYMETRIC MAP



LOCATION: Sec.20, T.3 S., R.3 W., about 3.5 mi (6 km) northwest of Dundee and 8 mi (13 km) northeast of McMinnville. Surface-water outlet at lat 45°17'55", long 123°04'48". Dundee 7½-minute quadrangle map (not named on map).

DRAINAGE BASIN: Chehalem Creek (Willamette River).

DRAINAGE AREA: 0.50 mi^2 (1.29 km^2).

SURFACE AREA: 7 acres (28,000 m^2).

SURFACE ELEVATION: 350 ft (107 m) above mean sea level, from topographic map.

VOLUME: 90 acre-ft (110,000 m^3). (Information furnished by the Oregon State Engineer.)

INFLOW: No measurable flow in channel on east side of reservoir.

OUTFLOW: No measurable flow to channel on west side of reservoir.

USE: No public recreation.

REMARKS: Water-rights certificate issued for storage of 90 acre-ft (110,000 m^3) and diversion of 0.9 ft^3/s (0.03 m^3/s) for irrigation.
Sampling site at lat 45°17'55", long 123°04'45".

Photograph taken November 4, 1974.

WATER-QUALITY DATA

SAMPLING TIME: 1100 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.1	21.0	8.0	63
BOTTOM (27')	1.8	14.5	6.7	111

TRANSPARENCY (Metres) 3.0 COLOR (Pt-Co units) 5

LOCATION: Secs.14, 15, 22, and 23, T.3 S., R.6 W., about 8.5 mi (13.5 km) southwest of Pike and 13 mi (21 km) northwest of McMinnville. Surface-water outlet at lat 45°18'34", long 123°24'30". Fairdale 15-minute quadrangle map (not shown on map).

DRAINAGE BASIN: Nestucca River (Pacific Slope).

DRAINAGE AREA: 2.93 mi^2 (7.59 km^2).

SURFACE AREA: 140 acres (567,000 m^2) at normal pool.

SURFACE ELEVATION: 1,865 ft (568 m) above mean sea level at normal pool. The water surface was 1,854 ft (565 m) above mean sea level on the survey date.

VOLUME: 3,770 acre-ft (4.65 hm^3) at normal pool. (Information furnished by the city of McMinnville.) Volume was 2,410 acre-ft (2.97 hm^3) on the survey date.

INFLOW: Primarily from Nestucca River on south side of lake. Unnamed creeks on east and west side of lake also contribute to the total inflow.

OUTFLOW: Through dam to Nestucca River on northwest side of lake. Water is also diverted to Haskins Creek Reservoir (p.78) to supplement the McMinnville water supply.

USE: No recreational use.

REMARKS: No evidence of either floating or submerged aquatic growth.

The reservoir, which is drained every winter, is formed by an earth-fill dam. Under normal operation, the reservoir is filled in the spring (April-May) and drained when fall rains start.

Water-rights permit issued to the city of McMinnville for storage of 3,550 acre-ft (4.38 hm^3) and diversion of 6.4 ft^3/s (0.18 m^3/s) for municipal water supply.

Information on surface area, elevation, and bathymetry furnished by the Oregon State Engineer.

Photograph taken March 5, 1975.

WATER-QUALITY DATA

SAMPLING TIME: 1300 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.2	42
BOTTOM	7.2	48

ALKALINITY (mg/l as $CaCO_3$) 33

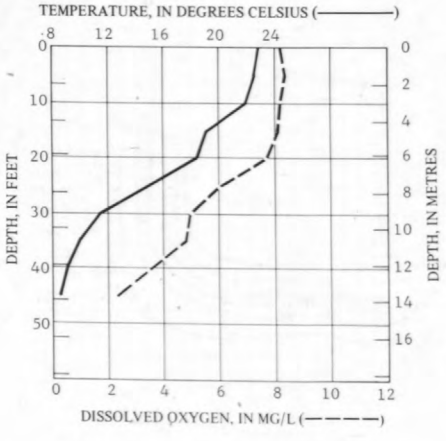
TOTAL HARDNESS (mg/l as $CaCO_3$) 15

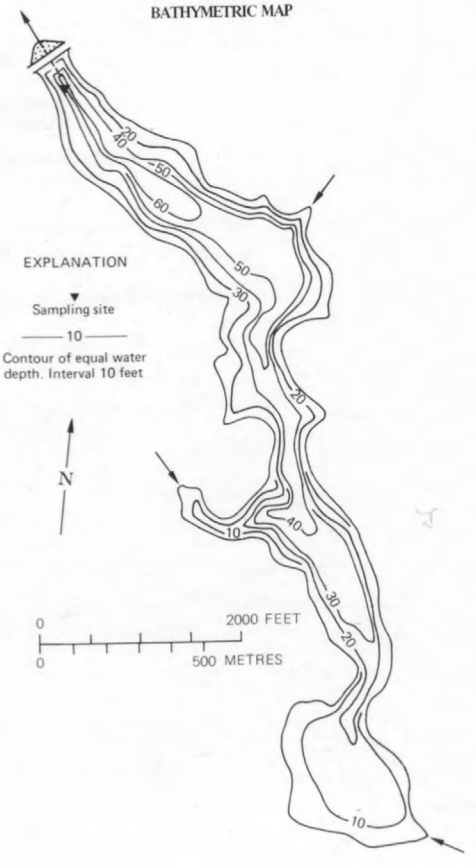
DISSOLVED SOLIDS (mg/l) 33

TRANSPARENCY (metres) 4.0

COLOR (Pt-Co units) 0

FECAL COLIFORM (colonies/100 ml) 0





LOCATION: Sec.6, T.4 S., R.5 W., about 7.5 mi (12 km) south of Fairdale and 8 mi (13 km) northeast of McMinnville. Surface-water outlet at lat 45°15'14", long 123°20'21". Fairdale 15-minute quadrangle map.

DRAINAGE BASIN: Yamhill River (Willamette River).

DRAINAGE AREA: 4.42 mi^2 (11.4 km^2).

SURFACE AREA: 5 acres (20,000 m^2).

SURFACE ELEVATION: 700 ft (213 m) above mean sea level, from topographic map.

VOLUME: 20 acre-ft (25,000 m^3).

INFLOW: Estimated 3 ft^3/s (0.08 m^3/s) from Baker Creek on northwest end of lake.

OUTFLOW: Estimated 3 ft^3/s (0.08 m^3/s) over spillway on southeast end of lake.

USE: No public recreation.

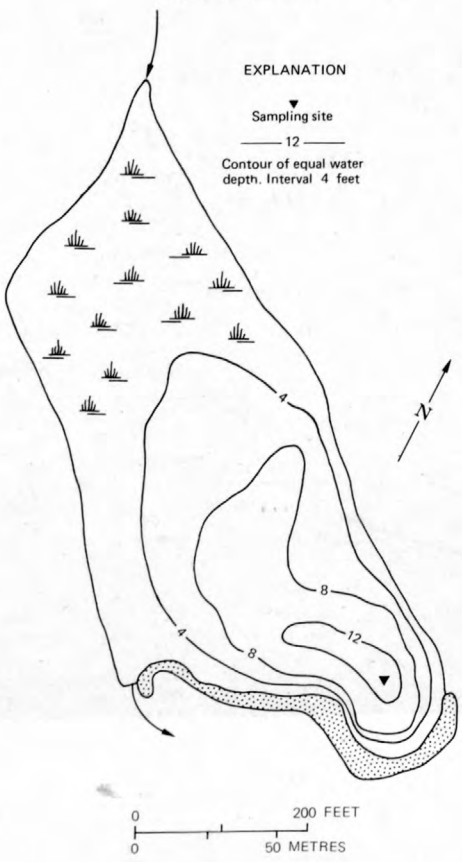
REMARKS: Large amounts of submerged vegetation were observed on the southwest side, and a large part of the northwest end was overgrown with grass.

The lake is formed by a dike along the southeast end of lake.

The lake is part of the Rainbow Lodge Youth Care Center operated by Yamhill County.

Information on surface area, volume, and bathymetry furnished by the Oregon State Engineer.

BATHYMETRIC MAP

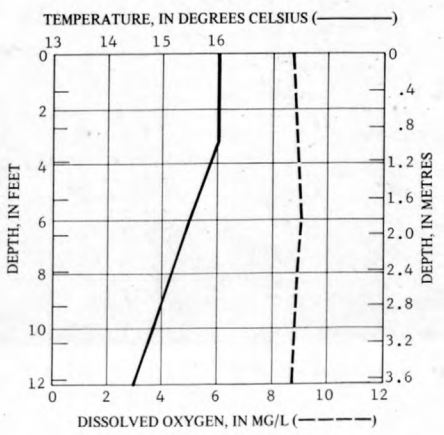


WATER-QUALITY DATA

SAMPLING TIME: 1100 hours
CLOUD COVER: 50 percent

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	8.0	93
BOTTOM	7.5	96

ALKALINITY (mg/l as $CaCO_3$)	42
TOTAL HARDNESS (mg/l as $CaCO_3$)	37
DISSOLVED SOLIDS (mg/l)	71
TRANSPARENCY (metres)	2.3
COLOR (Pt-Co units)	--
FECAL COLIFORM (colonies/100 ml)	0
SILICA (SiO_2) (mg/l)	21
IRON (Fe) (ug/l)	0
CALCIUM (Ca) (mg/l)	10
MAGNESIUM (Mg) (mg/l)	2.9
SODIUM (Na) (mg/l)	5.6
POTASSIUM (K) (mg/l)	.4
BICARBONATE (HCO_3) (mg/l)	50
CARBONATE (CO_3) (mg/l)	0
SULFATE (SO_4) (mg/l)	2.1
CHLORIDE (Cl) (mg/l)	4.3
FLUORIDE (F) (mg/l)	.0
NITRITE+NITRATE (as N) (mg/l)	.01
ORTHOPHOSPHORUS (as P) (mg/l)	.03



Photograph taken August 1, 1974.

LOCATION: Sec.20, T.5 S., R.3 W., about 1.5 mi (2.5 km) north of Hopewell and 8.5 mi (13.5 km) southeast of McMinnville. Surface-water outlet at lat 45°07'16", long 123°05'09". Mission Bottom 7½-minute quadrangle map (not named on map).

DRAINAGE BASIN: Yamhill River (Willamette River).

DRAINAGE AREA: 6.63 mi^2 (17.2 km^2).

SURFACE AREA: 20 acres (81,000 m^2).

SURFACE ELEVATION: 130 ft (40 m) above mean sea level, from topographic map.

VOLUME: 120 acre-ft (150,000 m^3).

INFLOW: No measurable flow from Palmer Creek on south end of reservoir.

OUTFLOW: No measurable flow through dam on northeast end of reservoir.

USE: No public recreation.

REMARKS: Large amounts of aquatic growth and many snags were observed. Bottom material is mostly soft mud covered by detritus.

Water-rights certificate issued for storage of 125 acre-ft (154,000 m^3) and diversion of 1.22 ft^3/s (0.03 m^3/s) for irrigation.

Information on surface area, volume, and bathymetry furnished by the Oregon State Engineer.

Photograph taken March 5, 1975.

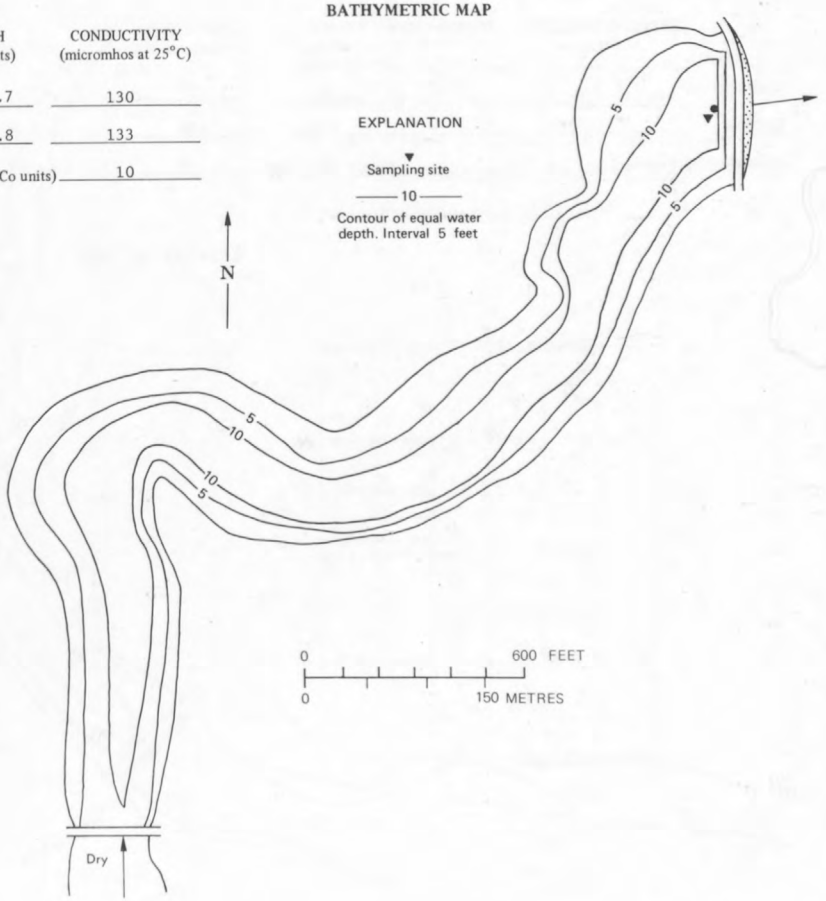
WATER-QUALITY DATA

SAMPLING TIME: 1200 hours
CLOUD COVER: 85 percent

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	2.8	20.8	6.7	130
BOTTOM	2.2	19.0	6.8	133

TRANSPARENCY (Metres) 1.4 COLOR (Pt-Co units) 10

BATHYMETRIC MAP



LOCATION: Secs.7 and 18, T.5 S., R.3 W., about 2 mi (3 km) west of Unionvale and 6.5 mi (10 km) southeast of McMinnville. Surface-water outlet at lat 45°08'40", long 123°06'14". Dayton 7½-minute quadrangle map, photorevised 1970 (not named on map).

DRAINAGE BASIN: Yamhill River (Willamette River).

DRAINAGE AREA: 1.57 mi^2 (4.07 km^2).

SURFACE AREA: 12 acres (49,000 m^2) at normal pool.

SURFACE ELEVATION: 150 ft (46 m) above mean sea level, from topographic map.

VOLUME: 75 acre-ft (92,000 m^3) at normal pool.

INFLOW: No measurable flow from Holdridge Creek on west end of reservoir.

OUTFLOW: No measurable flow through dam to Holdridge Creek on east end of reservoir.

USE: No public recreation.

REMARKS: Large amounts of submerged aquatic growth were observed.

Water-rights certificate issued for storage of 77.8 acre-ft (95,900 m^3) and diversion of 1.07 ft^3/s (0.03 m^3/s) for irrigation.

Information on surface area, volume, and bathymetry furnished by the Oregon State Engineer.

Photograph taken March 5, 1975.

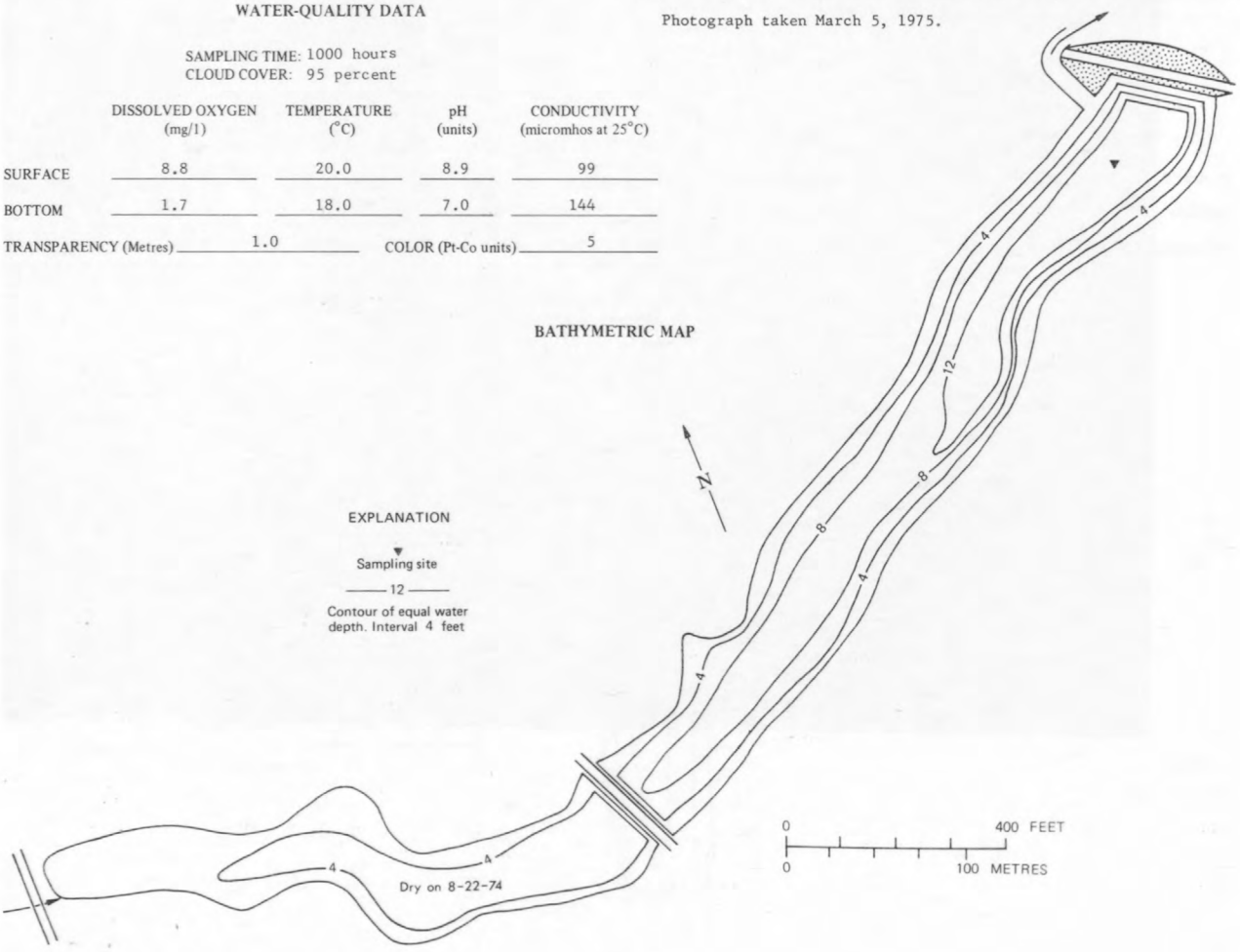
WATER-QUALITY DATA

SAMPLING TIME: 1000 hours
CLOUD COVER: 95 percent

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	8.8	20.0	8.9	99
BOTTOM	1.7	18.0	7.0	144

TRANSPARENCY (Metres) 1.0 COLOR (Pt-Co units) 5

BATHYMETRIC MAP



LOCATION: Sec.32, T.2 S., R.3 W., and sec.5, T.3 S., R.3 W., about 6 mi (10 km) northwest of Dundee and 10 mi (16 km) northeast of McMinnville. Surface-water outlet at lat 45°20'41", long 123°05'19". Dundee 7½-minute quadrangle map (not shown on map).

DRAINAGE BASIN: Chehalem Creek (Willamette River).

DRAINAGE AREA: 0.83 mi^2 (2.15 km^2).

SURFACE AREA: 15 acres (61,000 m^2) at normal pool.

SURFACE ELEVATION: 240 ft (73 m) above mean sea level, from topographic map.

VOLUME: 200 acre-ft (250,000 m^3) at normal pool.

INFLOW: No flow observed in channel on northeast end of lake.

OUTFLOW: No flow observed through dam on west end of lake.

USE: No public recreation.

REMARKS: Emergent vegetation was observed along the shoreline. The caretaker indicated that aquatic weeds have been a problem.

The lake is formed by an earth-fill dam on the west end.

Information on surface area, volume, and bathymetry furnished by the Oregon State Engineer.

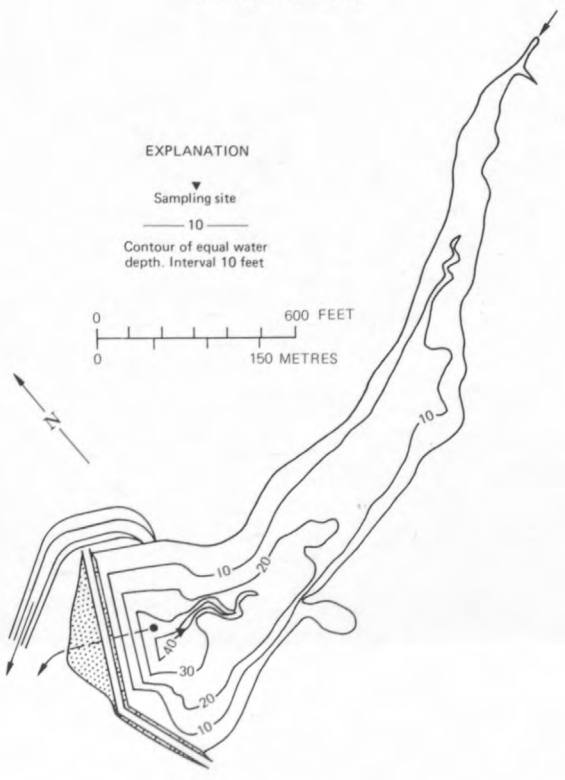
WATER-QUALITY DATA

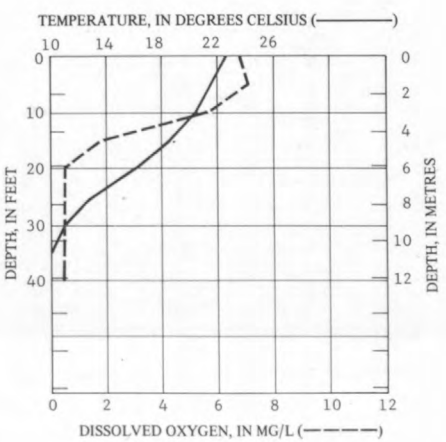
SAMPLING TIME: 1430 hours
CLOUD COVER: None

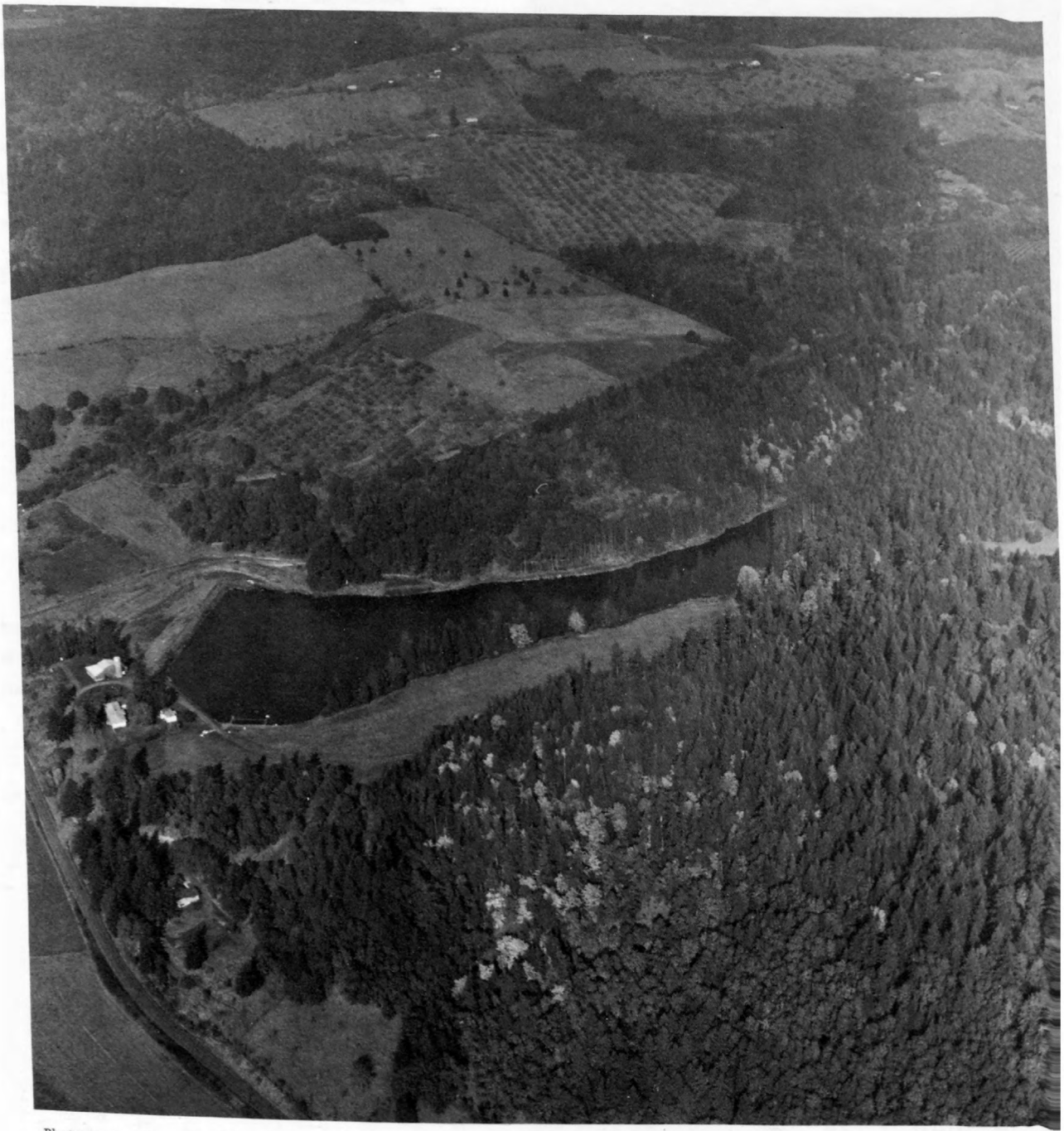
	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.8	70
BOTTOM	6.4	116

ALKALINITY (mg/l as $CaCO_3$)	28
TOTAL HARDNESS (mg/l as $CaCO_3$)	23
DISSOLVED SOLIDS (mg/l)	56
TRANSPARENCY (metres)	1.5
COLOR (Pt-Co units)	--
FECAL COLIFORM (colonies/100 ml)	0
SILICA (SiO_2) (mg/l)	12
IRON (Fe) (ug/l)	40
CALCIUM (Ca) (mg/l)	5.8
MAGNESIUM (Mg) (mg/l)	2.0
SODIUM (Na) (mg/l)	4.9
POTASSIUM (K) (mg/l)	1.1
BICARBONATE (HCO_3) (mg/l)	30
CARBONATE (CO_3) (mg/l)	0
SULFATE (SO_4) (mg/l)	2.8
CHLORIDE (Cl) (mg/l)	3.3
FLUORIDE (F) (mg/l)	.0
NITRITE+NITRATE (as N) (mg/l)	2.2
ORTHOPHOSPHORUS (as P) (mg/l)	.00

BATHYMETRIC MAP







Photograph taken November 4, 1974.

LOCATION: Sec.16, T.3 S., R.3 W., about 3.5 mi (6 km) northwest of Dundee and 10 mi (16 km) northeast of McMinnville. Surface-water outlet at lat 45°19'01", long 123°03'37". Dundee 7½-minute quadrangle map (not named on map).

DRAINAGE BASIN: Chehalem Creek (Willamette River).

DRAINAGE AREA: 0.66 mi^2 (1.71 km^2).

SURFACE AREA: 5 acres (20,000 m^2).

SURFACE ELEVATION: 200 ft (61 m) above mean sea level, from topographic map.

VOLUME: Not determined.

INFLOW: No flow observed in channel on south end of reservoir.

OUTFLOW: No flow observed through dam on north side of reservoir.

USE: No public recreation.

REMARKS: Water-rights certificate issued for diversion of 0.17 ft^3/s (0.005 m^3/s) for irrigation.

Photograph taken November 4, 1974.

WATER-QUALITY DATA

SAMPLING TIME: 1000 hours
CLOUD COVER: 5 percent

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	6.6	20.0	8.1	73
BOTTOM (23')	0.9	11.8	6.7	106

TRANSPARENCY (Metres) 1.5 COLOR (Pt-Co units) 10

LOCATION: Sec.2, T.3 S., R.3 W., about 4 mi (6 km) north of Dundee and 12 mi (19 km) northeast of McMinnville. Surface-water outlet at lat 45°20'14", long 123°01'34". Dundee 7½-minute quadrangle map (not named on map).

DRAINAGE BASIN: Chehalem Creek (Willamette River).

DRAINAGE AREA: 2.09 mi^2 (5.41 km^2).

SURFACE AREA: 10 acres (40,000 m^2).

SURFACE ELEVATION: 230 ft (70 m) above mean sea level, from topographic map.

VOLUME: 100 acre-ft (120,000 m^3).

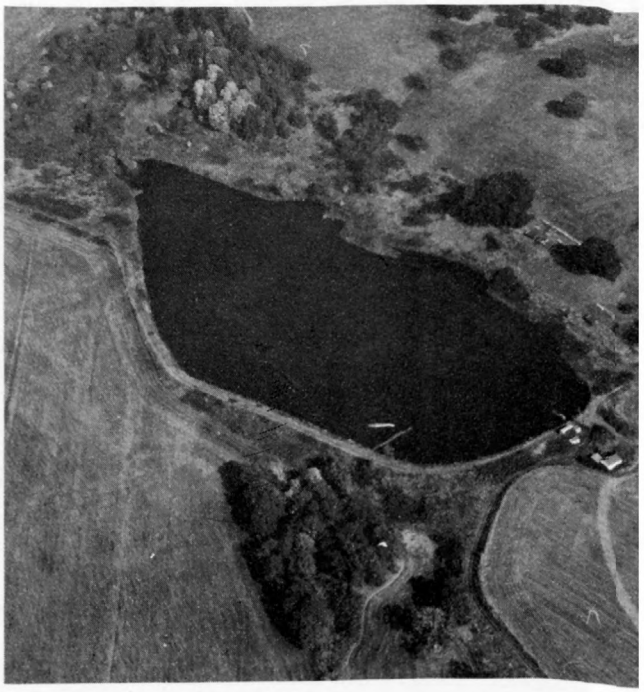
INFLOW: No measurable flow in channel on north side of reservoir.

OUTFLOW: Estimated less than 1 ft^3/s (0.03 m^3/s) through dike to Bryan Creek on southwest side of reservoir.

USE: No public recreation.

REMARKS: Water-rights certificate issued for storage of 97.0 acre-ft (120,000 m^3) and diversion of 2.14 ft^3/s (0.06 m^3/s) for irrigation.

Information on surface area, volume, and bathymetry furnished by the Oregon State Engineer.



Photograph taken November 4, 1974.

WATER-QUALITY DATA

SAMPLING TIME: 0830 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	7.4	19.5	7.4	85
BOTTOM	2.2	11.5	6.8	82

TRANSPARENCY (Metres) 4.0 COLOR (Pt-Co units) 5

BATHYMETRIC MAP

LOCATION: Sec.3, T.6 S., R.5 W., on the Yamhill-Polk County line about 2 mi (3 km) northeast of Ballston and 10 mi (16 km) southwest of McMinnville. Surface-water outlet at lat 45 04'38", long 123 16'32". Ballston 7½-minute quadrangle map (not named on map).

DRAINAGE BASIN: Yamhill River (Willamette River).

DRAINAGE AREA: 0.40 mi^2 (1.04 km^2).

SURFACE AREA: 14 acres (57,000 m^2).

SURFACE ELEVATION: 150 ft (46 m) above mean sea level, from topographic map.

VOLUME: 98 acre-ft (121,000 m^3).

INFLOW: No measurable flow in channel on south side of reservoir.

OUTFLOW: No measurable flow through spillway on north side of reservoir.

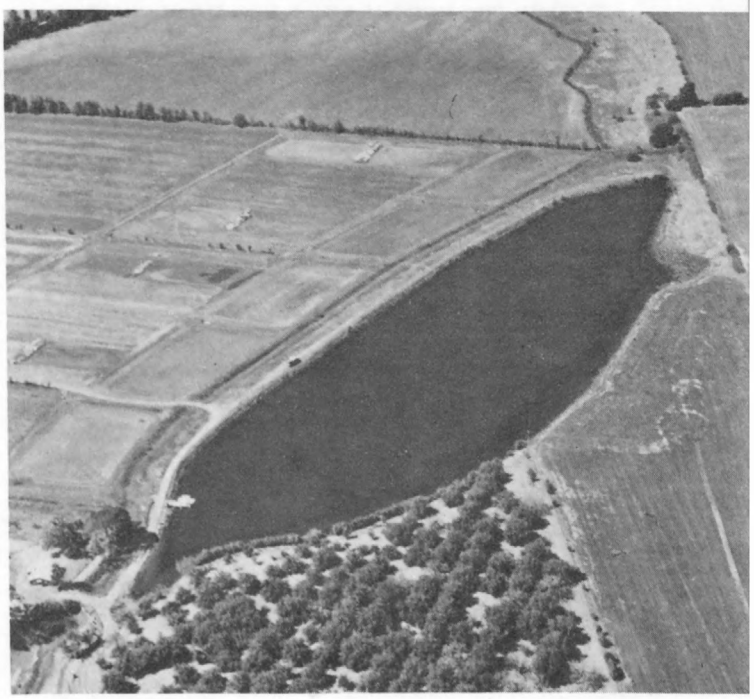
USE: No public recreation.

REMARKS: No evidence of either submerged or surface aquatic growth. Bottom material is mostly hard clay.

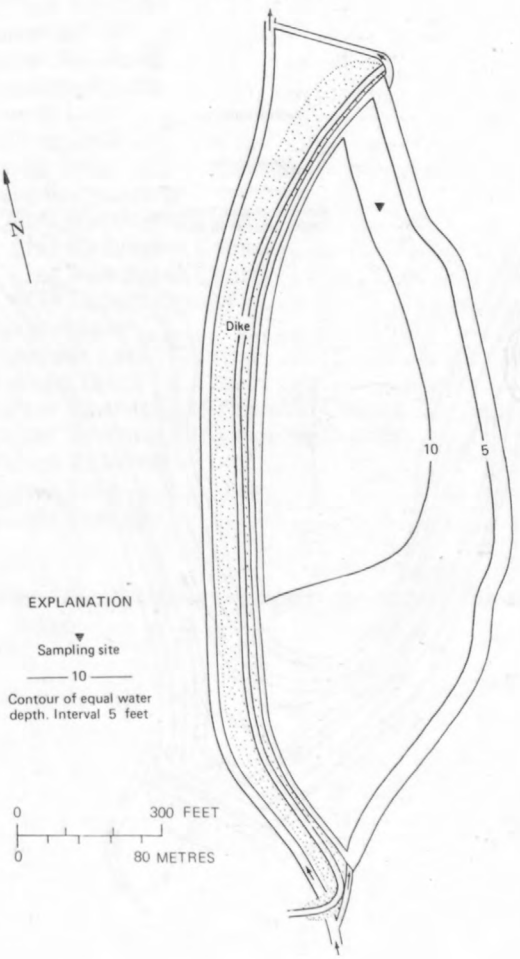
Water-rights certificate issued for storage of 98 acre-ft (121,000 m^3) for irrigation.

Information on surface area, volume, and bathymetry furnished by the Oregon State Engineer.

Reservoir appears as Polk County number 19 in volume 2 of Lakes of Oregon.



BATHYMETRIC MAP



WATER-QUALITY DATA

SAMPLING TIME: 1300 hours
CLOUD COVER: None

	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	8.8	205
BOTTOM	9.0	201

ALKALINITY (mg/l as $CaCO_3$)	90
TOTAL HARDNESS (mg/l as $CaCO_3$)	83
DISSOLVED SOLIDS (mg/l)	141
TRANSPARENCY (metres)	1.0
COLOR (Pt-Co units)	25
FECAL COLIFORM (colonies/100 ml)	108

LOCATION: Secs.7 and 8, T.4 S., R.3 W., about 1 mi (1.6 km) northwest of Dayton and 5 mi (8 km) northeast of McMinnville. Surface-water outlet at lat 45°14'02", long 123°05'30". Dayton 7½-minute quadrangle map (not named on map).

DRAINAGE BASIN: Yamhill River (Willamette River).

DRAINAGE AREA: 0.78 mi^2 (2.02 km^2).

SURFACE AREA: 9 acres (36,000 m^2).

SURFACE ELEVATION: 150 ft (46 m) above mean sea level, from topographic map.

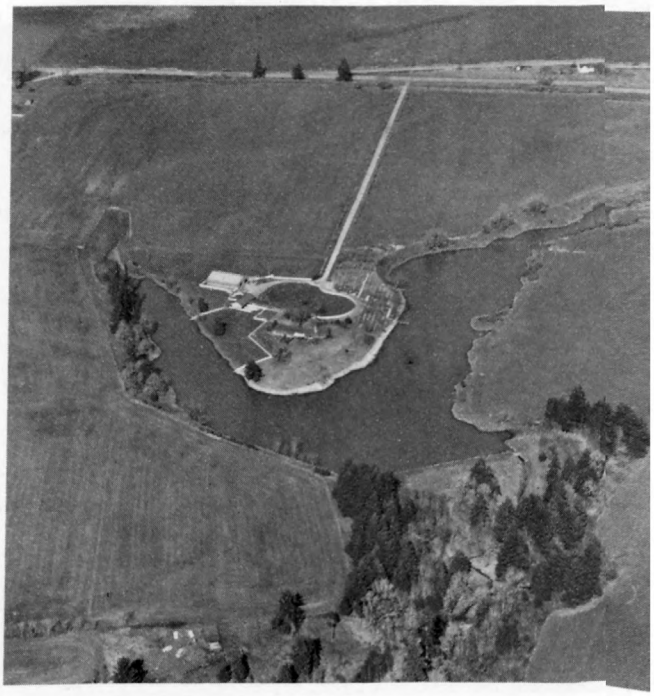
VOLUME: 170 acre-ft (210,000 m^3).

INFLOW: No measurable flow in channels on northeast and northwest ends of reservoir.

OUTFLOW: No measurable flow through dam on south side of reservoir.

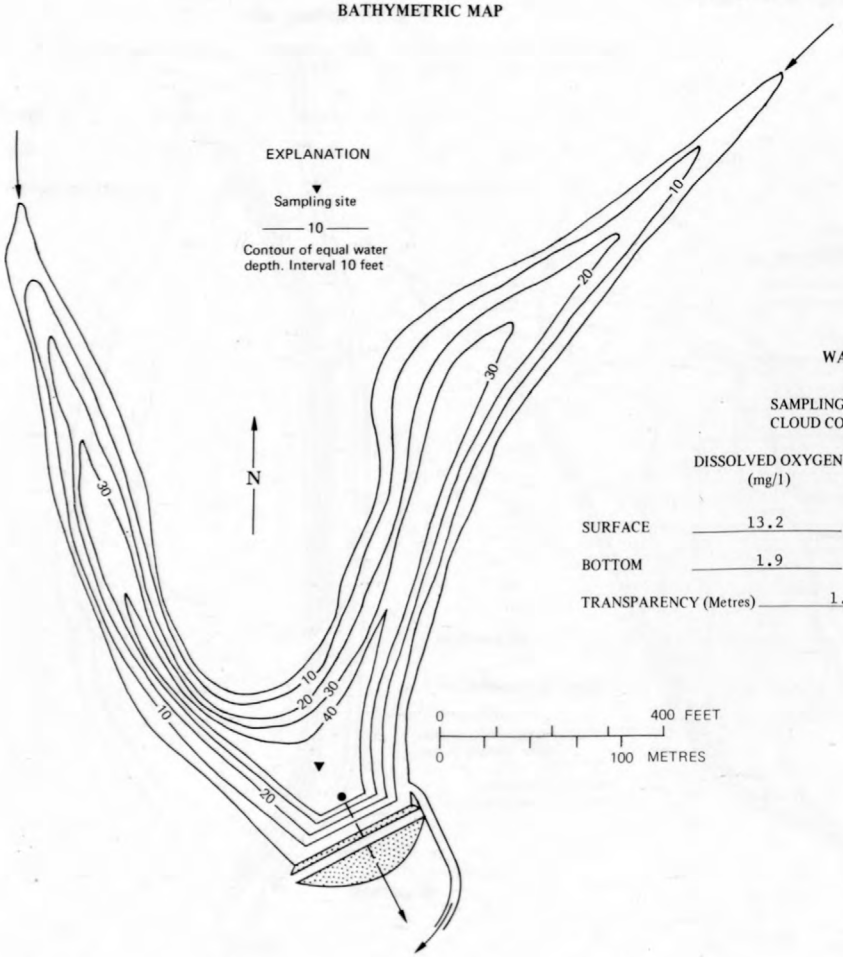
USE: No public recreation.

REMARKS: Water-rights certificate issued for storage of 122 acre-ft (150,000 m^3) and diversion of 1.5 ft^3/s (0.04 m^3/s) for irrigation.
Bathymetry furnished by the Oregon State Engineer.



Photograph taken November 4, 1974.

BATHYMETRIC MAP



WATER-QUALITY DATA

SAMPLING TIME: 1400 hours
CLOUD COVER: None

	DISSOLVED OXYGEN (mg/l)	TEMPERATURE (°C)	pH (units)	CONDUCTIVITY (micromhos at 25°C)
SURFACE	13.2	21.0	9.7	160
BOTTOM	1.9	9.8	6.7	310

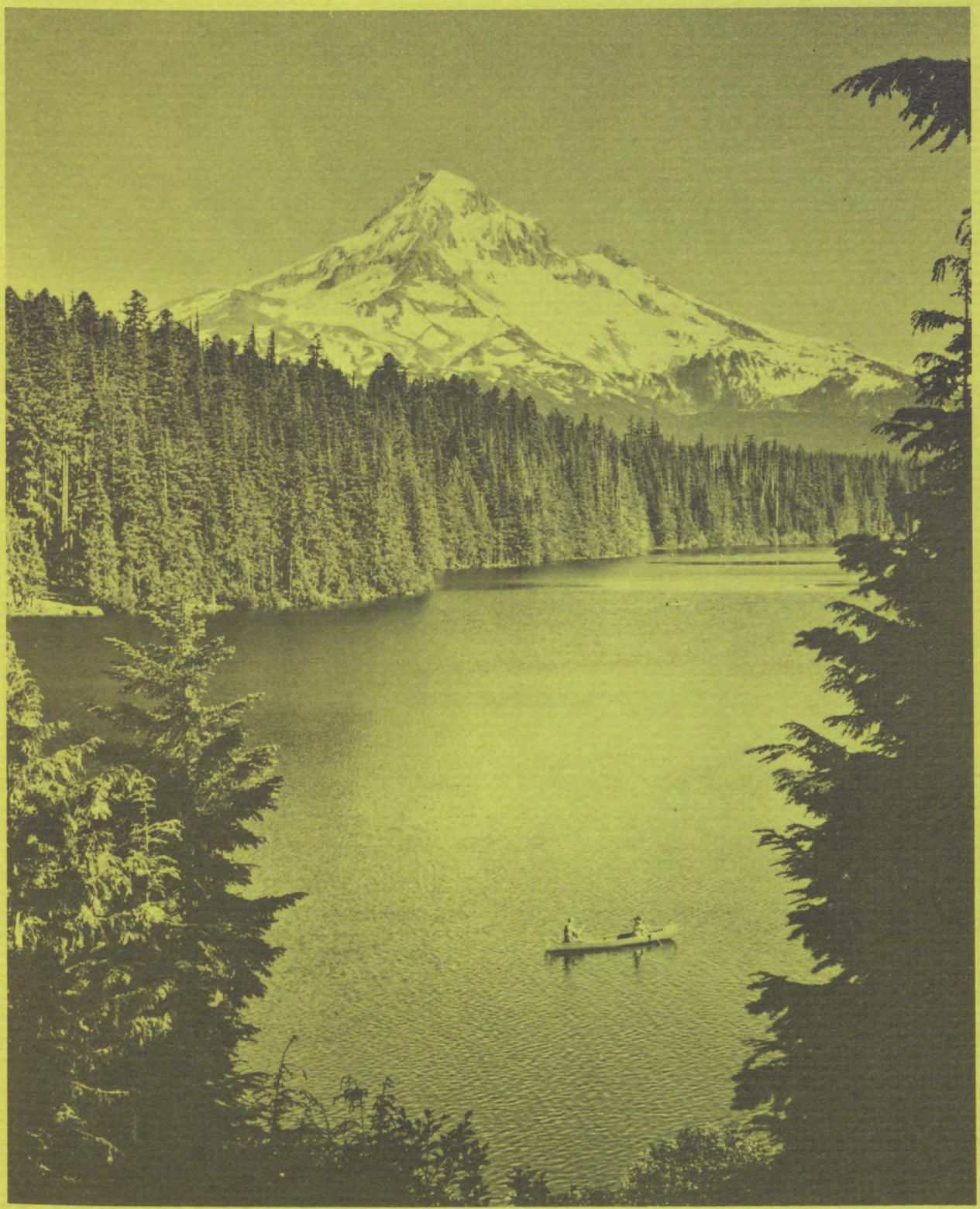
TRANSPARENCY (Metres) 1.4 COLOR (Pt-Co units) 15

Index

Note: Identification numbers are shown for some lakes.

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of America's "Department of Natural Resources."

The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States—now and in the future.



Lost Lake . . *Oregon State Hwy. photo*

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