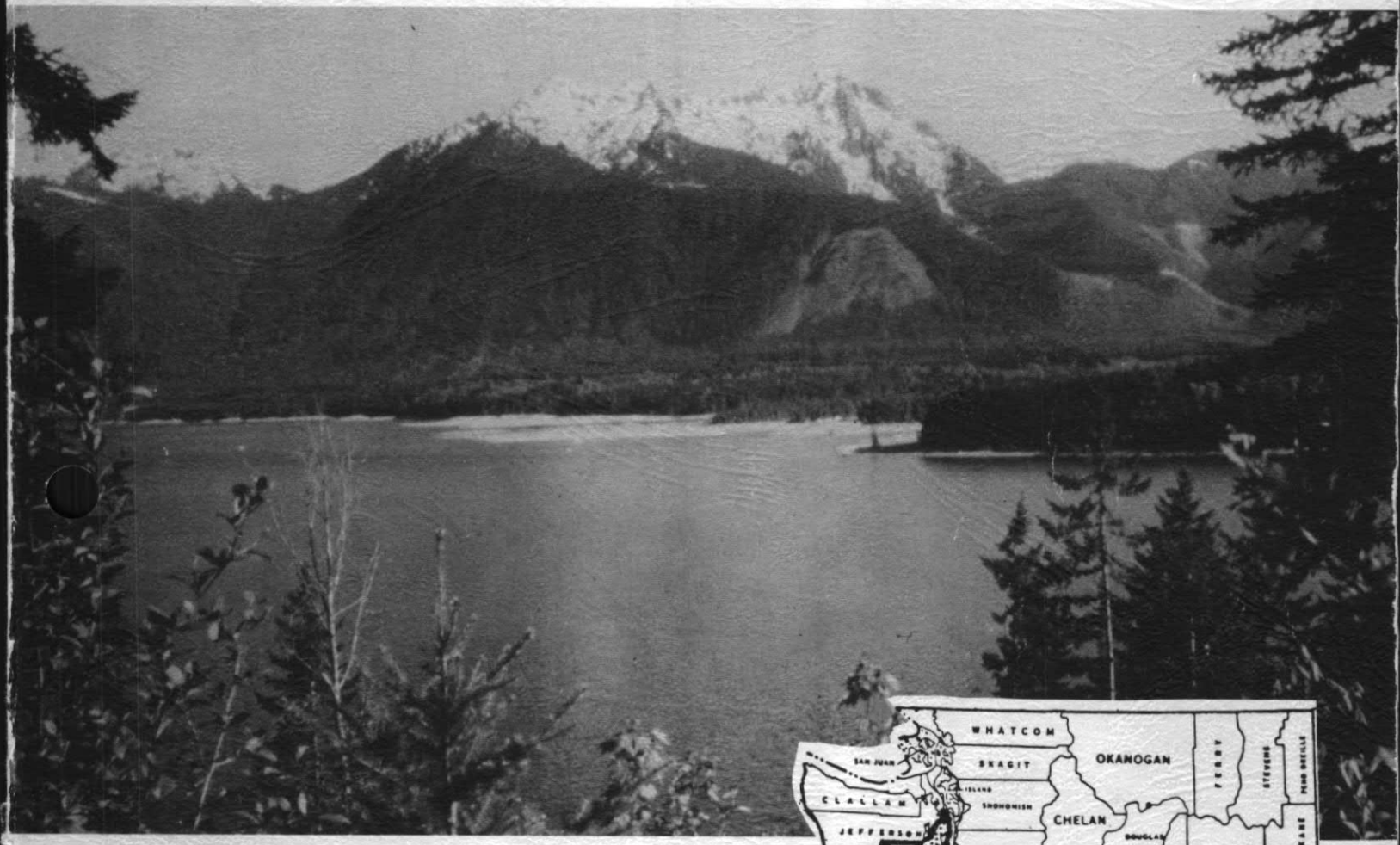
RECONNAISSANCE DATA ON LAKES IN WASHINGTON VOLUME 3

KITSAP, MASON, AND PIERCE COUNTIES



STATE OF WASHINGTON
DANIEL J. EVANS, Governor

DEPARTMENT OF ECOLOGY
JOHN A. BIGGS, Director

Water-Supply Bulletin 43, Vol. 3

Prepared in Cooperation with
United States Department of the Interior
Geological Survey • 1976

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VOLUME 3

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and L. M. Nelson

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UNITED STATES GEOLOGICAL SURVEY

1976

CONTENTS

ILLUSTRATION

The following factors are provided for conversion of English values used in this report to metric values:

Multiply	By	To obtain
Inches	2.54	centimetres (cm)
Feet (ft)	.3048	metres (m)
Miles (mi)	1.609	kilometres (km)
Cubic feet (ft^3)	.02832	cubic metres (m^3)
Square miles (sq mi)	2.590	square kilometres (km^2)
Acres	4047.	square metres (m^2)
	.4047	hectares (ha)
Cubic feet per second (ft^3/s)	.02832	cubic metres per second (m^3/s)

RECONNAISSANCE DATA ON LAKES IN WASHINGTON
VOLUME 3

KITSAP, MASON, AND PIERCE COUNTIES

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ABSTRACT

A total of 91 lakes in three counties of western Washington was sampled using helicopter or boat to obtain information on their physical, cultural, and water-quality conditions. The basic data presented will be useful to planning groups involved in lake management and to sportsmen, tourists, and others interested in Washington's lakes.

INTRODUCTION

The State of Washington has more than 7,800 lakes, ponds, and reservoirs (Wolcott, 1964 and 1965), many of which provide excellent recreational opportunities and supply water for agricultural, municipal, and industrial purposes. These water bodies constitute an important part of the State's total water resources and are an integral part of the hydrology of many drainage basins.

This is the third of a seven-volume series of reports on Washington lakes and contains data from 91 lakes in Kitsap, Mason, and Pierce Counties in the western part of the State (fig. 1).

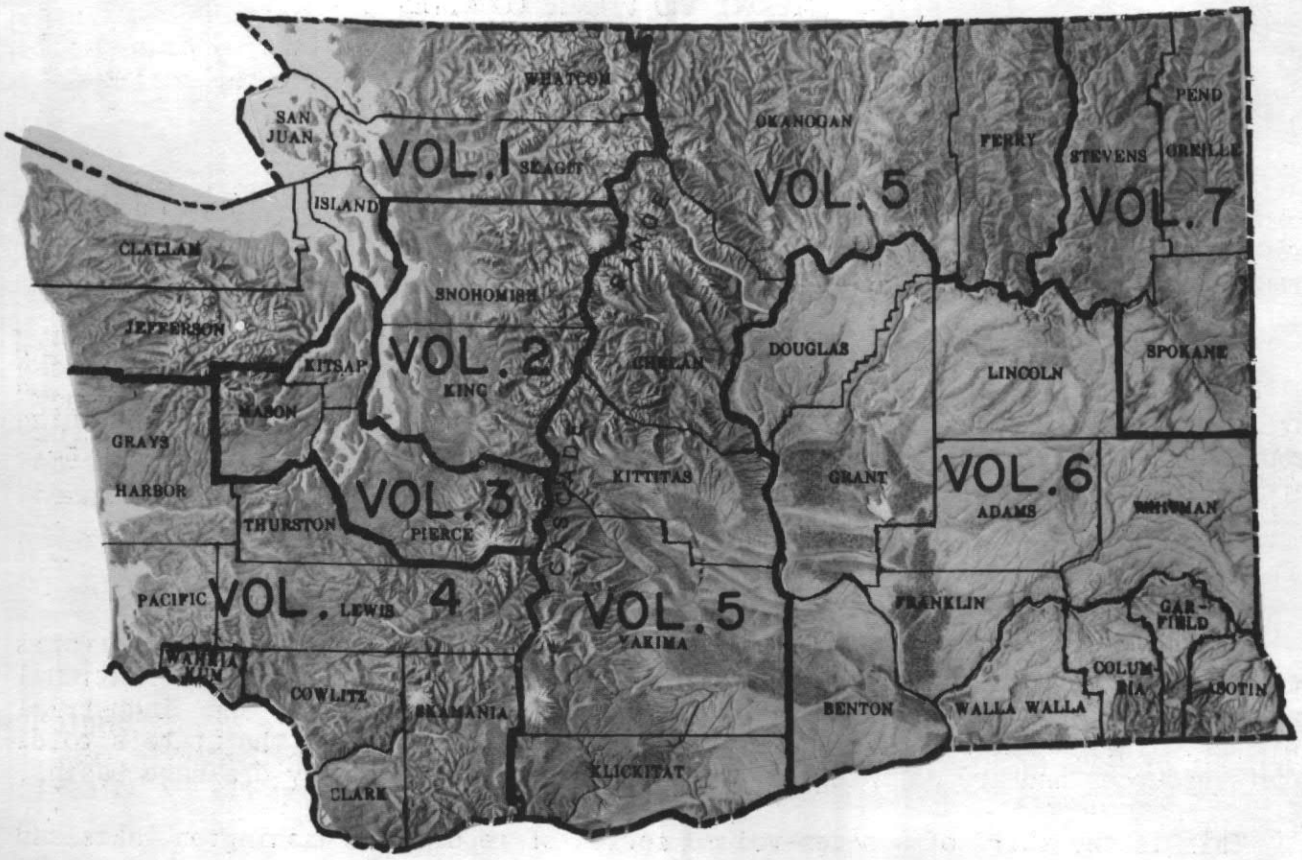

FIGURE 1.--Location of counties covered in each of seven-volume report series.

Purpose and Scope

Although both the importance and value of the Washington lakes are widely recognized, the quantity and types of information currently available for most of the lakes are not adequate to provide the understanding needed for wise management of the lakes. Thus, the need to obtain additional information about lakes resulted in the initiation in 1970 of a cooperative program between the Washington State Department of Ecology and the U.S. Geological Survey, whereby selected lakes in Washington would be investigated (Collings, 1973; Bortleson and others, 1974). Because the program--designed for the study of approximately 25 lakes per year during fiscal years 1970-74--deals with only a small fraction of the total number of lakes in the State, a reconnaissance study involving several hundred lakes was undertaken to provide preliminary information for use by planning groups as well as sportsmen, tourists, and others interested in preserving the water quality of Washington's lakes.

In general, the study consists of a data-collection program designed to (1) document the present water quality and the overall status of the lakes, and (2) provide basic data pertaining to the physical, cultural, and water- quality characteristics of the lakes.

More than 750 lakes in all but four counties of the State were studied; these are equally distributed between western and eastern Washington. Most of the lakes investigated were 20 acres or larger in size and were selected because they constitute shorelines of the State covered under the Shoreline Management Act of 1971 (Washington State Department of Ecology, 1973). However, some of the lakes listed as constituting shorelines of the State were not sampled; these included marshes with no open water or intermittent lakes which were dry at the time of visit.

Acknowledgments

The authors gratefully acknowledge the assistance of the State of Washington Department of Game for permission to reproduce many of the lake bathymetric maps. Many other bathymetric maps were reproduced from those in the reports by Wolcott (1964, 1965).

Occurrence of Lakes in Washington

Lakes in Washington occur under various geologic conditions. In the Puget Sound Lowland of western Washington most lakes occupy depressions in the surface of glacial drift--the sand, gravel, silt, clay, and till laid down by the Puget lobe of continental glaciers during the ice age. These depressions are either elongate troughs cut by the passing ice sheet or are more circular kettles formed by the melting of stagnant ice blocks.

In the adjacent foothills of the Cascade Range and Olympic Mountains, most lakes occupy depressions eroded into the bedrock by the passing continental glacier, while lakes in the higher mountains are in basins cut by local alpine glaciers.

In eastern Washington, lakes in the higher northern areas--the Okanogan Highlands and Selkirk Mountains--and on the eastern slope of the Cascade Range generally occur in glacier-cut depressions in bedrock. In the semiarid Columbia Plateau, underlain by basalt, most lakes occupy the more deeply cut parts of some coulees of the channeled scablands. Most of these coulees were cut by gigantic, catastrophic floods (Bretz, 1959) resulting from the breaking of ice dams and the rapid emptying of large glacial lakes.

Many lakes have been formed, or increased in size, by man's activities. Numerous reservoirs are located in mountain valleys and serve a variety of purposes, including municipal water supply, irrigation, electrical-power generation, flood control, and recreation. In lowland areas some natural lakes have been enlarged or new lakes have been formed by small dams. In the Columbia Basin Irrigation Project area of eastern Washington, several lakes have been enlarged and reservoirs (Banks Lake and Potholes Reservoir) have been created in conjunction with large-scale irrigation by water diverted from the Columbia River at Grand Coulee Dam. Also, numerous small lakes and ponds have resulted from irrigation in the area.

Data Collected and Definitions

The data collected and the lake parameters used in describing the individual lakes are explained here, prior to presentation of the data for each lake. The parameters are discussed in the sequence in which they appear on the data sheets. The definitions of additional limnological and hydrological terms used throughout the report are found in the Glossary (p. 10).

Lake name. The lake name was taken from U.S. Geological Survey topographic maps. Duplicate lake names are followed by location designations for uniqueness. Lakes that are not named on the topographic map and for which no local name is known are referred to as "unnamed," followed by a location designation. Only the proper name of the lake is given; in common usage the term "Lake" may either precede or follow the proper name. All adjectives (for example, Big, East, and Upper) follow the lake name. When a lake has two names, both are given, but priority is given to the topographic-map name. The lake names and respective data are listed alphabetically by counties.

Location. Latitude, longitude, township, range, and section location were determined from U.S. Geological Survey quadrangle maps. The location point is the lake outlet. For lakes without outlets, the southernmost shoreline point is used. The lakes are presented in the report according to the county in which the location point occurs.

Drainage basin. The major drainage system in which the lake is located was determined. Some lakes drain directly into Puget Sound or the Pacific Ocean without entering a major river system.

Physical data. Physical parameters were determined from topographic and bathymetric (bottom-contour) maps of the lakes. If bathymetric maps were not available, the lakes were sounded and charted by boat using a continuous-recording fathometer. For lakes with no boat access, a helicopter equipped with a fathometer, pontoons, and a conventional outboard motor was used to chart the lake. By use of aerial photographs and lake depths, the bathymetric data were digitized and transferred to computer cards which served as input to a computerized program that calculated lake morphometric parameters (for example, lake volume, surface area, and length of shoreline).

Drainage area.--The surface-drainage area, that contributes water to the lake is given in square miles (sq mi). These areas were delineated on U.S. Geological Survey topographic maps and measured by planimeter. Some lakes are in drainage basins of low relief in which surface runoff to the lake may not be a significant factor. Nevertheless, in all cases the drainage area was determined according to topographic divide.

Surface altitude.--A single altitude in feet (ft) above mean sea level (msl), obtained from topographic maps, is given for each lake. If not specifically shown on the map, altitudes are estimated from the nearest contour line. The altitude of a reservoir is given as the level of the water surface at normal full reservoir capacity.

Surface area (A).--The surface area of the lake, in acres, was obtained from planimetry of the lake outline or from computerized calculations of digitized data.

Volume (V).--Lake volume, in acre-feet, was obtained either by computing and then summing the volumes of each stratum of water between successive contours on the bathymetric map or by calculating from digitized data. Because lake volume can vary between seasons and from year to year, the volume figures reported (as well as other morphometric data) are intended only to describe the general size of the lake.

Mean depth ($\bar{Z}$).--The mean depth, in feet, for a specified lake stage, was obtained by dividing the volume of the lake by its area.

Maximum depth (Z_m).--The difference in elevation, in feet, between the bottom and the surface of the lake. The maximum depth obtained from field surveys may not necessarily be shown on the bathymetric maps.

Length of shoreline (L).--The distance around, or perimeter, in miles, of the water surface touching the shore at a specified lake stage. The shoreline length depends on the fineness of detail of the shore outline on the bathymetric map.

Shoreline configuration (D_L).--A dimensionless ratio of the length of shoreline to the circumference of a circle having an area equal to that of the lake, given as

$$D_L = \frac{L}{2\sqrt{\pi A}} .$$

This quantity may be regarded as an index of the geological and littoral processes affecting the shape of the lake. Nearly circular lakes have values near unity, subcircular lakes have slightly greater D_L values and elongate lakes have the highest D_L values. High D_L values are common to lakes formed along old drainages or by the damming of streams to form a lake in the valley behind a dam.

High values for shoreline configuration suggest the presence of shallow water and protected bays--areas suitable for plant growth--and also indicate an increase in contact between land and water. Therefore, shoreline configuration is often an indirect indicator of plant growth capacity and enrichment potential from nearshore development and runoff.

Development of volume (D_V).--The development of volume is defined as the ratio of the mean depth ($\bar{Z}$) to the maximum depth (Z_m). Thus, lakes with a low D_V ratio are usually conical-shaped depressions, and lakes with a high D_V ratio are steep-sided with flat bottoms. Shallow lakes which have large values for development of volume (D_V), tend to provide the greater opportunity for exposure of bottom sediments to overlying water and for circulation of bottom nutrients.

Bottom slope (Z_r).--The slope profile of a lake bottom, expressed as a percentage ratio of the maximum depth to the mean lake diameter (referred to by Hutchinson, 1957, p. 167, as relative depth) and given as

$$Z_r = \frac{Z_m \times 50\sqrt{\pi}}{\sqrt{A}} .$$

Bottom slope is a measure of the extent of shallow water and is important to the growth of rooted aquatic plants and potential for wind mixing of water with bottom sediments.

Basin geology. The predominant geology of the lake's drainage basin was obtained from a geologic map of the State of Washington (Huntting and others, 1961). The drainage basin is indicated as being underlain by either (1) unconsolidated sedimentary deposits and (or) metasedimentary rocks, or (2) igneous rocks.

Inflow. Perennial or intermittent surface inflow is indicated, if known. Some lakes have no visible inflow, and water gain is from direct precipitation on the lake and (or) from ground-water seepage.

Outflow. The presence or absence of a surface-water outflow channel is indicated. Some lakes have no surface-water outflow, and water loss is through evaporation, transpiration, and (or) ground-water seepage.

Cultural data. Data related to cultural development were obtained from topographic maps, aerial photographs, and shoreline reconnaissance by helicopter or boat.

Nearshore residential development.--The percentage of shoreline occupied by residential development was determined from aerial photographs.

Number of nearshore homes.--A count of the number of nearshore homes adjoining the lakefront was made from field observations, topographic maps, or aerial photographs.

Land use.--The drainage basins of the lakes were partitioned into various generalized land-use categories. Values given reflect the percentages of the basin used primarily for forest or for residential urban, residential suburban, or agricultural development. The lake surface is also given as a percentage of the total drainage basin. A general description of the land-use categories is as follows:

a. Residential urban.--Predominant use is for single-family residences, where apartment complexes and commercial or industrial activities also may be present.

b. Residential suburban.--Predominant use is single-family residences.

c. Agricultural.--Pasture or cropland.

d. Forest or unproductive.--Public and private forest lands and tree farms. Lands may include cleared or fallow unproductive land, meadows, wetlands, and seasonal recreational areas.

e. Lake surface.--Includes surface area of the lake and of upstream tributary lakes.

Public boat access to lake.--The presence of a public boat access is indicated. Most public boat access facilities are maintained by the State of Washington Department of Game. The location of the boat access (symbol ▲) is shown on the bathymetric map.

Water-quality data. From helicopters fitted with pontoons or from boats, vertical profiles of temperature and DO (dissolved oxygen) concentration were measured in the deepest part of each lake. Multiple sites were sampled on lakes with areas greater than 1,000 acres and on irregular-shaped lakes. Secchi-disc visibility was also determined. Water samples were collected for color, nutrient, and specific-conductance analyses at depths 3.0 feet below the water surface and 3-5 feet above the lake bottom. Lakes less than 5 feet deep were sampled at about one-third and two-thirds the depth of the lake. For most lakes, estimates of the percentage of both lake area and lake shoreline covered by emersed and (or) floating rooted aquatic plants were made by a visual inspection of the lake during aerial reconnaissance. Samples for fecal-coliform bacteria were collected at selected nearshore sites, approximately 100 feet offshore at a depth of 1 foot below the water surface.

Information from most of the lakes was collected during the periods of July-September 1973 or May-September 1974. Prior to 1973, some of the lakes were sampled four times during a year by Bortleson, Higgins, and Hill (1974). For those lakes sampled more than once during a year, the data from the midsummer sample period are presented. All samples were collected and analyzed according to accepted standardized procedures (American Public Health Association and others, 1971; Brown and others, 1970; and Slack and others, 1973).

Nutrients.--A nutrient is any chemical element, ion, or compound that is required by an organism for the continuation of growth, reproduction, and other life processes. Many elements and compounds act as nutrients to supply the food for aquatic plants and algae. However, nitrogen and phosphorus usually are considered the limiting nutrients to plant growth and as such received the most emphasis in this study. Whatever nutrient is limiting aquatic plant growth, the concentrations of nitrogen and phosphorus are useful in evaluating the trophic conditions of a lake (Lee, 1970). The nutrient concentrations that were determined at top and bottom sampling depths included total nitrate, nitrite, ammonia and organic nitrogen, phosphorus, and orthophosphate. For those lakes sampled during previous studies (Bortleson and others, 1974), the samples for orthophosphate, nitrite, and nitrate were filtered through a 0.45-μm (micrometre) millipore filter. The concentrations of these particular samples are indicated as "dissolved."

Specific conductance.--Specific conductance is a measure of the water's ability to conduct an electric current and is expressed in micromhos per centimetre at 25°C (Celsius). Because the specific conductance is related to the number and specific chemical types of ions in solution, it can be used for approximating the dissolved-solids concentration in the water.

Water temperature.--Temperature, which varies in lakes with depth and time of year, is an important controlling factor for life processes and chemical-reaction rates, as well as many physical events that occur in the aquatic environment.

For most lakes, the water temperatures listed for the upper, near-surface water were probably close to the maximum for the year when sampled. Temperature profiles in lakes during midsummer, when thermal stratification is marked, generally follow one of two common patterns. In shallow lakes, well exposed to the wind, temperatures will be found to be practically constant from top to bottom. This uniformity of temperature indicates that the waters are well mixed throughout. The other common pattern occurs in deeper lakes, where three characteristic thermal layers are present: (1) an upper zone (epilimnion) of generally warmer water in which temperature is more or less uniform throughout; (2) an intermediate zone (metalimnion) in which temperature decreases rapidly with depth; and (3) a lower zone (hypolimnion) of colder water in which temperature is again more or less uniform throughout.

The temperature of the deep-water layer (hypolimnion) during midsummer is of biological significance because (1) temperature stratification and water circulation affect the vertical distribution of nutrients, and (2) water temperatures affect the potential of cold-water fisheries resources.

Color.--Color is one control of light transmission through water. High color values often result from the decomposition of vegetation, giving the water a brown, tea-like color and reducing water clarity. Color value is determined by a comparison of the water with standardized colored-glass discs and is reported in platinum-cobalt (Pt-Co) units.

Secchi-disc visibility.--Secchi-disc visibility is the depth at which a black and white disc (8 inches in diameter) disappears from view when lowered into the water. Secchi-disc visibility is a measure of water transparency or clarity. Because changes in biological production can cause changes in the color and turbidity of a lake, Secchi-disc visibility often is used as a gross measure of the quantity of plankton in the water. Secchi-disc depths preceded by the symbol ">" indicate the disc was resting on the bottom of the lake and was still visible.

Dissolved oxygen.--The concentration of DO in a lake varies with time of year and depth of water and is a function of many factors, including the water temperature, atmospheric pressure, and salinity of the water. Oxygen concentration in water is continually being altered by life processes, such as photosynthesis and respiration, and by complex chemical reactions. Of special biological significance is the amount of DO in the hypolimnion during midsummer. The organisms in the lighted upper layers of water produce organic matter which eventually settles to the bottom where bacteria consume oxygen to degrade the organic materials, thereby reducing the DO concentration in the hypolimnion. The hypolimnetic-oxygen deficit frequently is related to the biomass or plant growth in the upper waters (Hutchinson, 1957). For good growth and general health of trout, salmon, and other species of cold-water biota, the DO concentrations should not be less than 6.0 mg/l (milligrams per litre) according to the Federal Water Pollution Control Administration (1968).

Emersed plants.--These are large plants that can be seen without magnification. Examples of emersed plants include cattails and sedges in which the leaves or other structures extend above the water surface. In this report, rooted floating aquatic plants such as waterlilies and watershield are considered emersed. The rooted aquatic-plant growth was assessed according to the percentage of the lakeshore and water surface covered by emersed and (or) floating plants.

Remarks. This includes other useful lake information that was obtained during the reconnaissance. Such topics as the following might be included.

1. Descriptive information.
2. Qualifying statements.
3. Availability of additional information.
4. Unusual lake or drainage-basin characteristics.

Bathymetric maps. For most of the lakes, a bathymetric map is given. The map source and date of the survey are indicated.

Aerial photographs. An aerial photograph is shown for most of the lakes and reservoirs. Black-and-white aerial photographs at an approximate scale of 1:12,000 and 1:63,000 were obtained from the State of Washington Department of Natural Resources. Additional aerial photographs at an approximate scale of 1:4,800 were taken by the U.S. Geological Survey of selected lakes in the populated, 10-county Puget Sound area and of other selected lakes throughout the State. Many of the bathymetric maps produced by the U.S. Geological Survey are shown superimposed on the aerial photographs.

GLOSSARY

Acre-foot. Volume of water required to cover 1 acre to a depth of 1 foot, and equal to 43,560 ft^3 (325,851 gallons).

Algae. Simple plants, many microscopic; contain chlorophyll and lack roots, stems, and leaves. Most algae are aquatic and may become a nuisance when environmental conditions are suitable for prolific growth.

Algal bloom. A large number of a particular algal species. A condition when water looks green because of the abundance of planktonic algae.

Bathymetric. Relating to the measurement of water depths, as for a lake.

Cultural eutrophication. The acceleration of the natural process of nutrient enrichment in a lake as a result of man's activities.

Emersed plant. These are large plants that can be seen without magnification. Examples of emersed plants include cattails and sedges in which the leaves or other structures extend above the water surface. In this report, rooted floating aquatic plants such as waterlilies and watershield are considered emersed.

Eutrophication, eutrophic. The enrichment of water, a natural process that may be accelerated by the activities of man; pertains to waters in which primary productivity is generally high as a consequence of a large supply of available nutrients.

Hydrogen sulfide. A gas with a distinctive "rotten egg" odor which can be detected in the hypolimnetic water containing only a few tenths of a milligram per litre of sulfide.

Intermittent or seasonal stream. Flows at certain times of the year when it receives water from springs or from some surface source, such as melting snow in mountainous areas.

Littoral. The shoreward region of a body of water.

Macrophyte. Large plants that can be seen without magnification; includes mosses and seed plants.

Marsh. Periodically wet or continually flooded areas where the surface is not deeply submerged, covered dominantly with sedges, cattails, rushes, or other plants that require marshy conditions for their growth.

Morphometry. Definition of physical shape and size, as of a water body.

Muck. A mixture containing highly decomposed organic material in which the original plant parts are not recognizable. Contains more mineral matter, and is usually darker, than peat.

Plankton. Suspended organisms that drift with the water currents.

Production. The total amount of living matter produced in an area per unit time regardless of the fate of the living matter.

Submersed plant. A rooted aquatic plant that lives and completes its life cycle entirely below the surface of the water. Examples of submersed plants include water milfoil, pondweed, and elodea.

Thermal stratification. The layering of water masses owing to different densities in response to temperature.

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B A S I C D A T A

HORSESHOE LAKE KITSAP COUNTY

LATITUDE 47*24'20" LONGITUDE 122*39'48" T22N-R1E-10
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.48 SQ MI	RESIDENTIAL DEVELOPMENT	75 %
ALTITUDE	270. FT		
LAKE AREA	40. ACRES	NUMBER OF NEARSHORE HOMES	38
LAKE VOLUME	470. ACRE-FT		
MEAN DEPTH	12. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	20. FT		
SHORELINE LENGTH	1.3 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.4	RESIDENTIAL SUBURBAN	5 %
DEVELOPMENT OF VOLUME	0.60	AGRICULTURAL	4 %
BOTTOM SLOPE	1.3 %	FOREST OR UNPRODUCTIVE	78 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	13 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

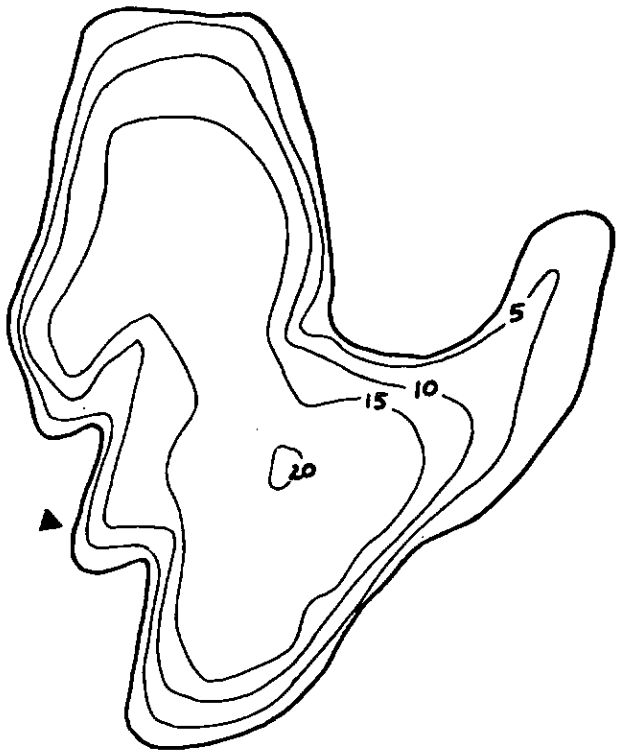
SAMPLE SITE	1	
DATE	6/20/73	
TIME	1325	1335
DEPTH (FT)	3.	15.
TOTAL NITRATE (N)	0.00	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.04	0.06
TOTAL ORGANIC NITROGEN (N)	0.08	0.11
TOTAL PHOSPHORUS (P)	0.007	0.005
DISSOLVED ORTHOPHOSPHATE (P)	0.001	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	20	20
WATER TEMPERATURE (DEG C)	19.2	17.5
COLOR (PLATINUM-COBALT UNITS)	5	5
SECCHI-DISC VISIBILITY (FT)	16	
DISSOLVED OXYGEN	8.7	8.5

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

DATE	6/20/73
TIME	1350
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	2
FECAL COLIFORM, MAXIMUM (COL./100ML)	18
FECAL COLIFORM, MEAN (COL./100ML)	16

REMARKS

A CHURCH CAMP AND COUNTY PARK ARE LOCATED ON THE LAKE. DURING THE SUMMER THE LAKE RECEIVES HEAVY RECREATIONAL USE. DENSE BEDS OF EMERSED PLANTS WERE OBSERVED IN THE SHALLOW BAYS OF THE LAKE. THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES IN 1973. THE PLANT SURVEY WAS MADE ON AUGUST 14, 1973.



N

0 500 1000 FEET

EXPLANATION

— 10 —

Line of equal
water depth
Interval 5 feet

Horseshoe Lake, Kitsap County. From Washington Department of Game, June 21, 1949.

Horseshoe Lake, Kitsap County. July 30, 1973. Approx. scale 1:4800.

ISLAND LAKE KITSAP COUNTY

LATITUDE 47*40'42" LONGITUDE 122*39'33" T25N-R1E-10
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.71 SQ MI	RESIDENTIAL DEVELOPMENT	42 %
ALTITUDE	217. FT		
LAKE AREA	47. ACRES	NUMBER OF NEARSHORE HOMES	25
LAKE VOLUME	800. ACRE-FT		
MEAN DEPTH	17. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	35. FT		
SHORELINE LENGTH	1.5 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.5	RESIDENTIAL SUBURBAN	4 %
DEVELOPMENT OF VOLUME	0.49	AGRICULTURAL	8 %
BOTTOM SLOPE	8.6 %	FOREST OR UNPRODUCTIVE	78 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	10 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

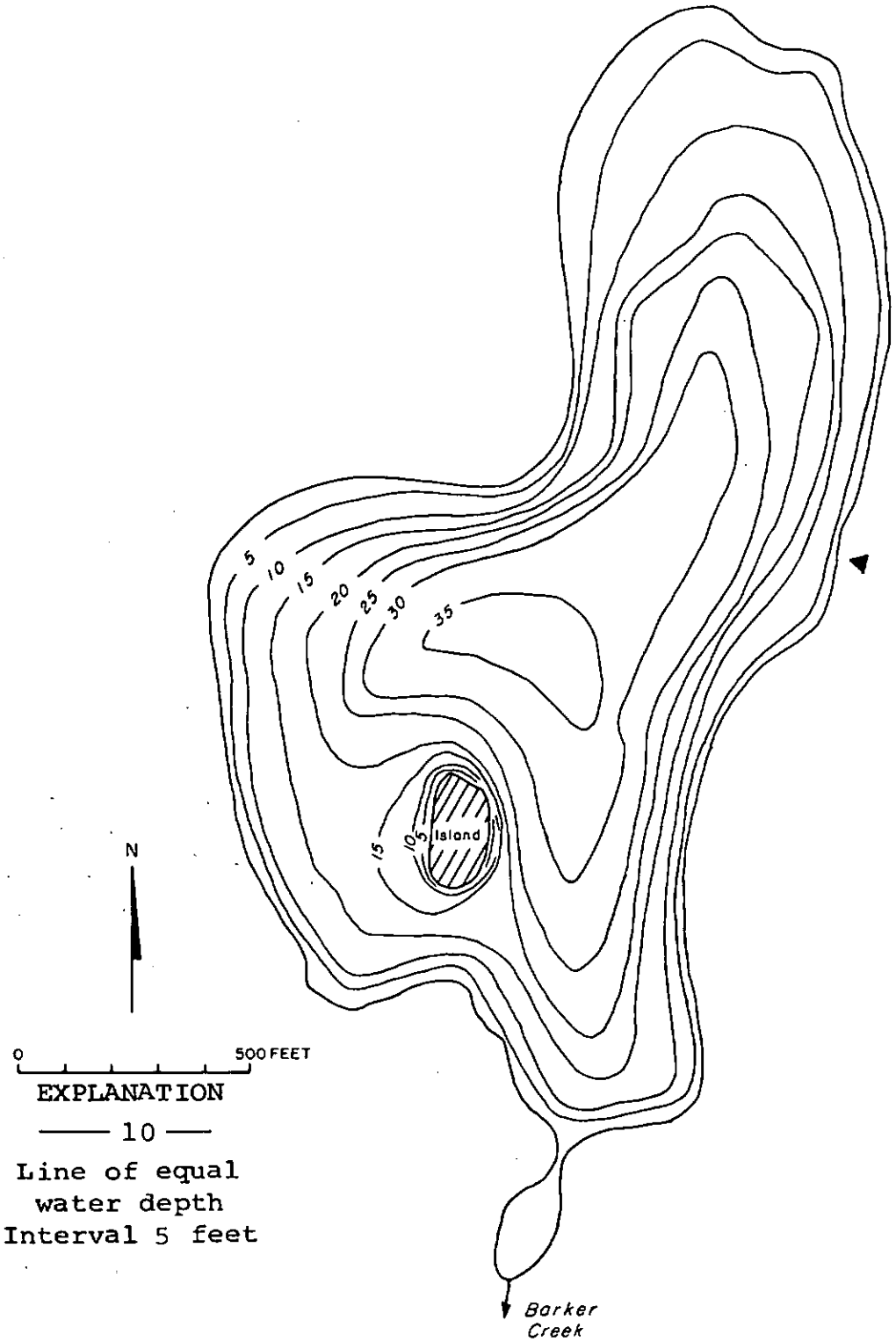
SAMPLE SITE	1	
DATE	8/12/71	
TIME	1115	1125
DEPTH (FT)	3.	20.
DISSOLVED NITRATE (N)	0.05	0.02
TOTAL NITRITE (N)	--	--
TOTAL AMMONIA (N)	0.07	0.07
TOTAL ORGANIC NITROGEN (N)	0.06	0.02
TOTAL PHOSPHORUS (P)	0.020	0.030
DISSOLVED ORTHOPHOSPHATE (P)	0.010	0.010
SPECIFIC CONDUCTANCE (MICROMHOS)	41	46
WATER TEMPERATURE (DEG C)	25.0	12.0
COLOR (PLATINUM-COBALT UNITS)	15	25
SECCHI-DISC VISIBILITY (FT)	10	
DISSOLVED OXYGEN	8.0	0.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	51- 75 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

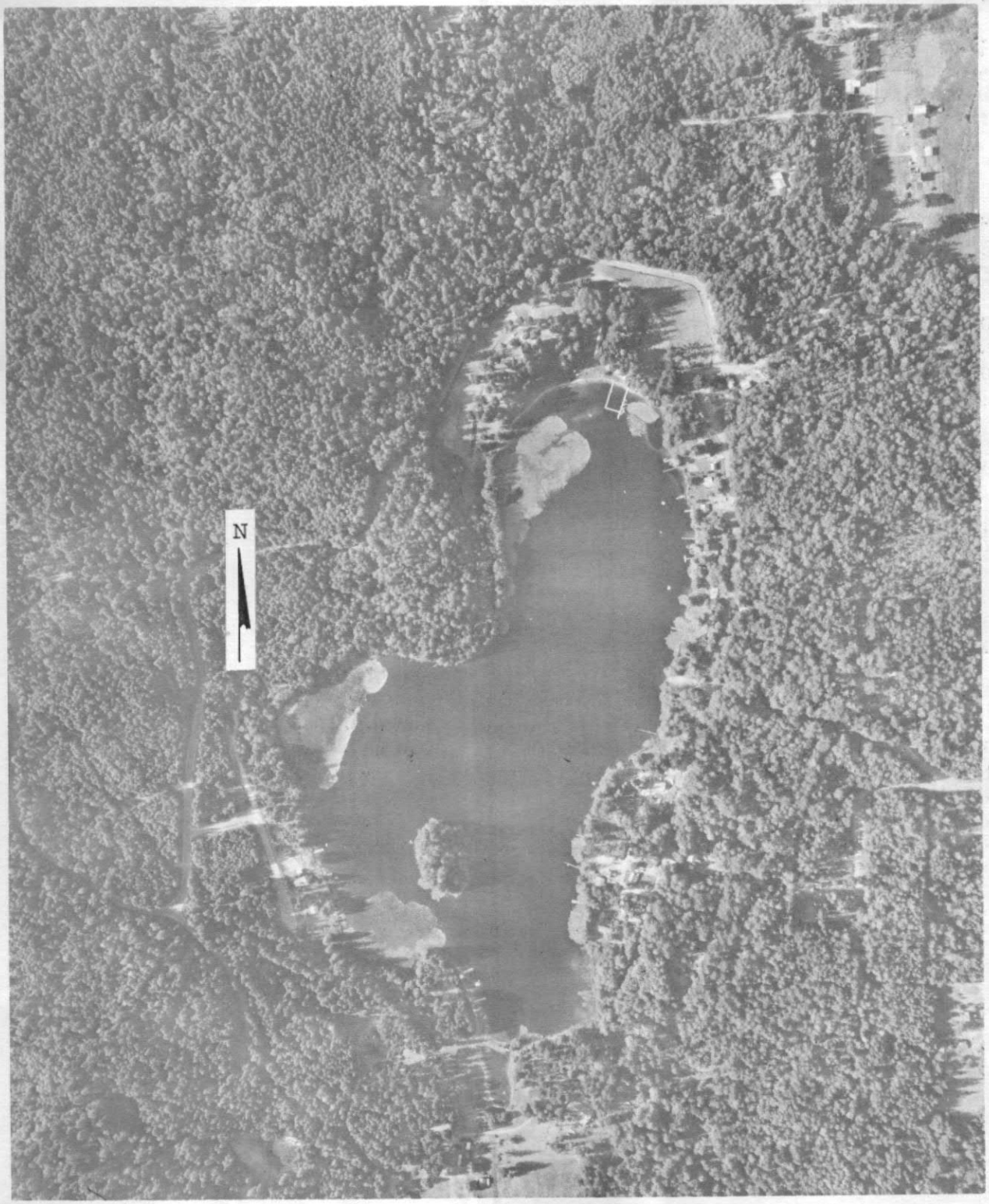
DATE	8/24/74
TIME	1035
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	7
FECAL COLIFORM, MAXIMUM (COL./100ML)	24
FECAL COLIFORM, MEAN (COL./100ML)	14

REMARKS

THE LAKE HAS A CHURCH CAMP AT THE SOUTH END AND A RESORT AT THE NORTH END. DURING THE SUMMER THE LAKE RECEIVES HEAVY RECREATIONAL USE. THE LITTORAL ZONE OF THE LAKE IS PREDOMINANTLY MUCK. IN 1971 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE SIX TIMES. THE PLANT SURVEY WAS MADE ON SEPTEMBER 8, 1971.



Island Lake, Kitsap County. From Washington Department of Game, July 19, 1955.



Island Lake, Kitsap County. August 9, 1972. Approx. scale 1:6600.

KITSAP LAKE KITSAP COUNTY

LATITUDE 47°34'47" LONGITUDE 122°42'34" T24N-R1W-32
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	2.73 SQ MI	RESIDENTIAL DEVELOPMENT	70 %
ALTITUDE	156. FT		
LAKE AREA	250. ACRES	NUMBER OF NEARSHORE HOMES	90
LAKE VOLUME	4500. ACRE-FT		
MEAN DEPTH	18. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	29. FT		
SHORELINE LENGTH	2.7 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	12 %
DEVELOPMENT OF VOLUME	0.62	AGRICULTURAL	3 %
BOTTOM SLOPE	2.7 %	FOREST OR UNPRODUCTIVE	71 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	14 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

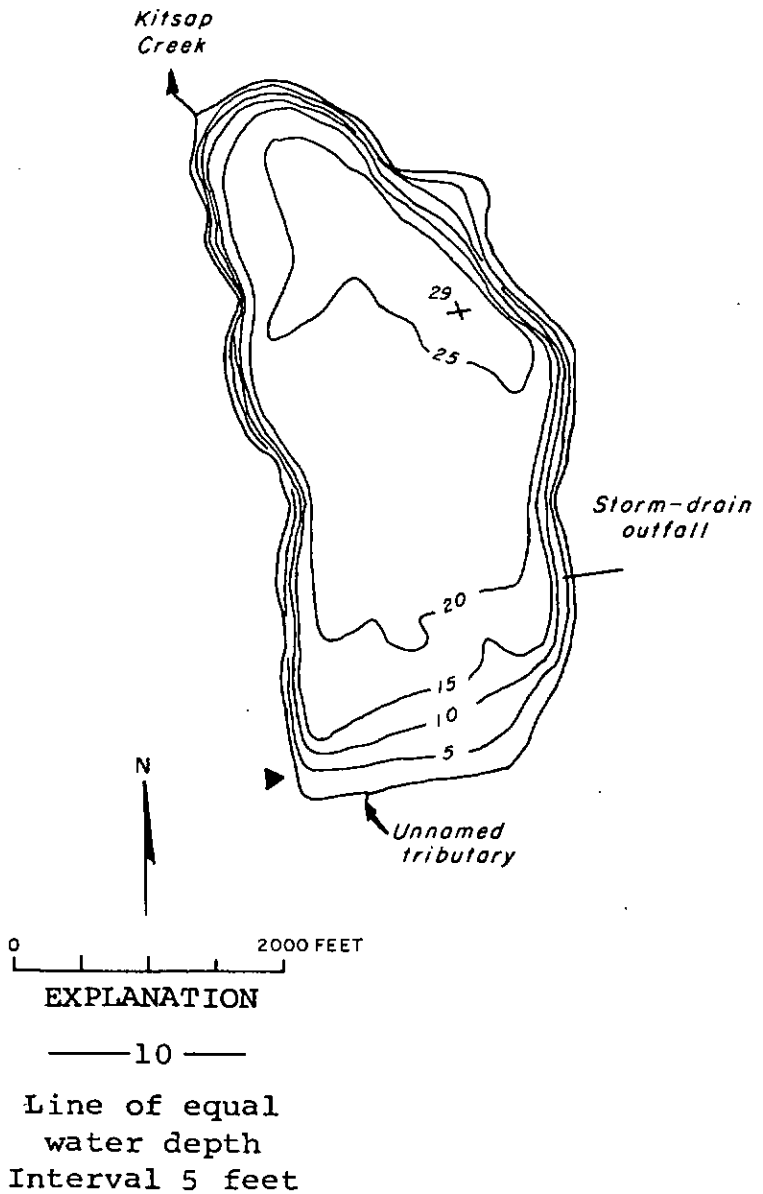
SAMPLE SITE	1	
DATE	6/30/71	
TIME	0	--
DEPTH (FT)	3.	23.
DISSOLVED NITRATE (N)	0.02	0.02
DISSOLVED NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.38	0.09
TOTAL ORGANIC NITROGEN (N)	0.06	0.00
TOTAL PHOSPHORUS (P)	0.020	0.010
DISSOLVED ORTHOPHOSPHATE (P)	0.010	0.010
SPECIFIC CONDUCTANCE (MICROMHOS)	81	82
WATER TEMPERATURE (DEG C)	18.5	16.9
COLOR (PLATINUM-COBALT UNITS)	--	--
SECCHI-DISC VISIBILITY (FT)	7	
DISSOLVED OXYGEN	10.5	8.9

LAKE SHORELINE COVERED BY EMERSED PLANTS	51- 75 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

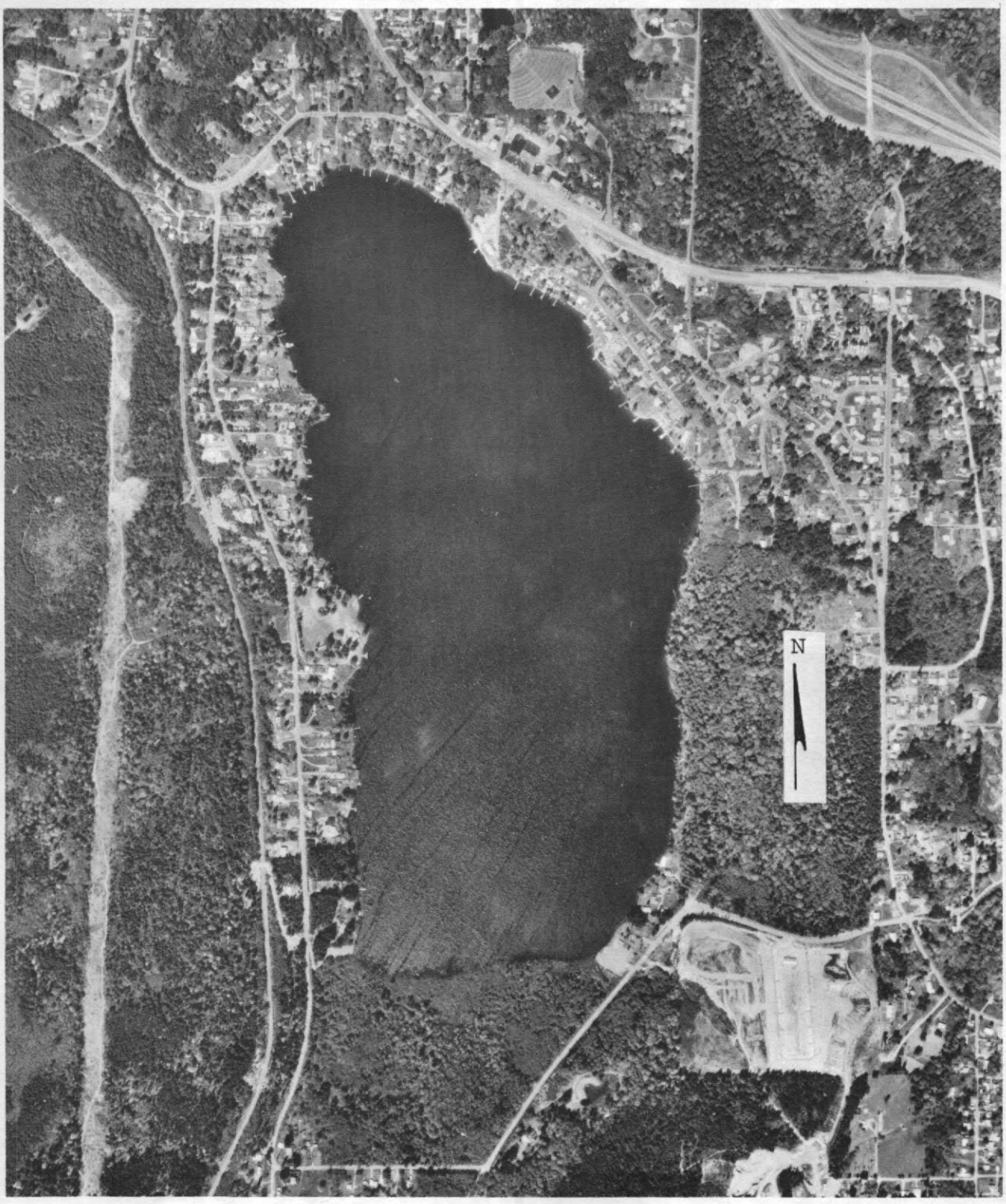
DATE	9/ 5/74
TIME	1600
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	3
FECAL COLIFORM, MAXIMUM (COL./100ML)	27
FECAL COLIFORM, MEAN (COL./100ML)	10

REMARKS

AN URBAN LAKE LOCATED NEAR BREMERTON. THE WATER LEVEL IS STABILIZED BY A FIVE-FOOT DAM. MOST OF THE SHORELINE WAS COVERED WITH EMERSED PLANTS (LILIES, SEDGES, AND CATTAILS). THE WATERLILY GROWTH WAS GREATEST IN THE SHALLOW SOUTHERN END OF THE LAKE WHERE PATCHES EXISTED 300 TO 500 FEET FROM SHORE. THE LITTORAL BOTTOM IS MOSTLY MUCK. AN ALGAL BLOOM WAS OBSERVED. THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES IN 1971. THE PLANT SURVEY WAS MADE ON SEPTEMBER 8, 1971.



Kitsap Lake, Kitsap County. From Washington Department of Game, June 7, 1950.



Kitsap Lake, Kitsap County. May 4, 1972. Approx. scale 1:12,000.

LONG LAKE KITSAP COUNTY

LATITUDE 47*28'58" LONGITUDE 122*35'12" T23N-R2E-17
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	9.36 SQ MI	RESIDENTIAL DEVELOPMENT	67 %
ALTITUDE	516. FT		
LAKE AREA	340. ACRES	NUMBER OF NEARSHORE HOMES	121
LAKE VOLUME	2200. ACRE-FT		
MEAN DEPTH	6. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	12. FT		
SHORELINE LENGTH	5.1 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.0	RESIDENTIAL SUBURBAN	5 %
DEVELOPMENT OF VOLUME	0.54	AGRICULTURAL	20 %
BOTTOM SLOPE	0.28 %	FOREST OR UNPRODUCTIVE	69 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	6 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

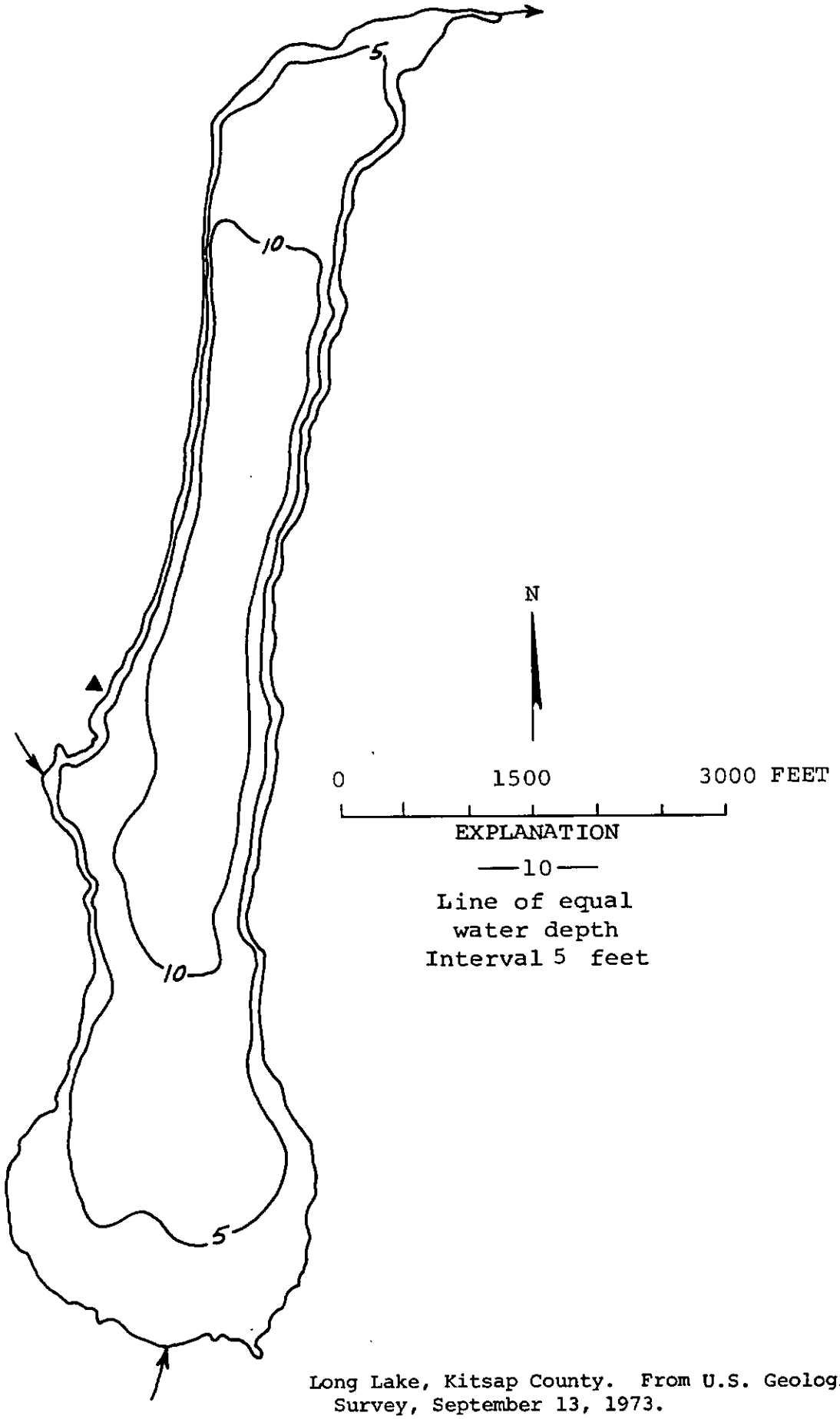
SAMPLE SITE	1	
DATE	6/22/73	
TIME	1040	1045
DEPTH (FT)	3.	7.
TOTAL NITRATE (N)	0.01	0.02
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.41	0.40
TOTAL ORGANIC NITROGEN (N)	0.09	0.07
TOTAL PHOSPHORUS (P)	0.041	0.022
DISSOLVED ORTHOPHOSPHATE (P)	0.005	0.005
SPECIFIC CONDUCTANCE (MICROMHOS)	74	74
WATER TEMPERATURE (DEG C)	21.0	18.3
COLOR (PLATINUM-COBALT UNITS)	30	30
SECCHI-DISC VISIBILITY (FT)	5	
DISSOLVED OXYGEN	12.0	9.4

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

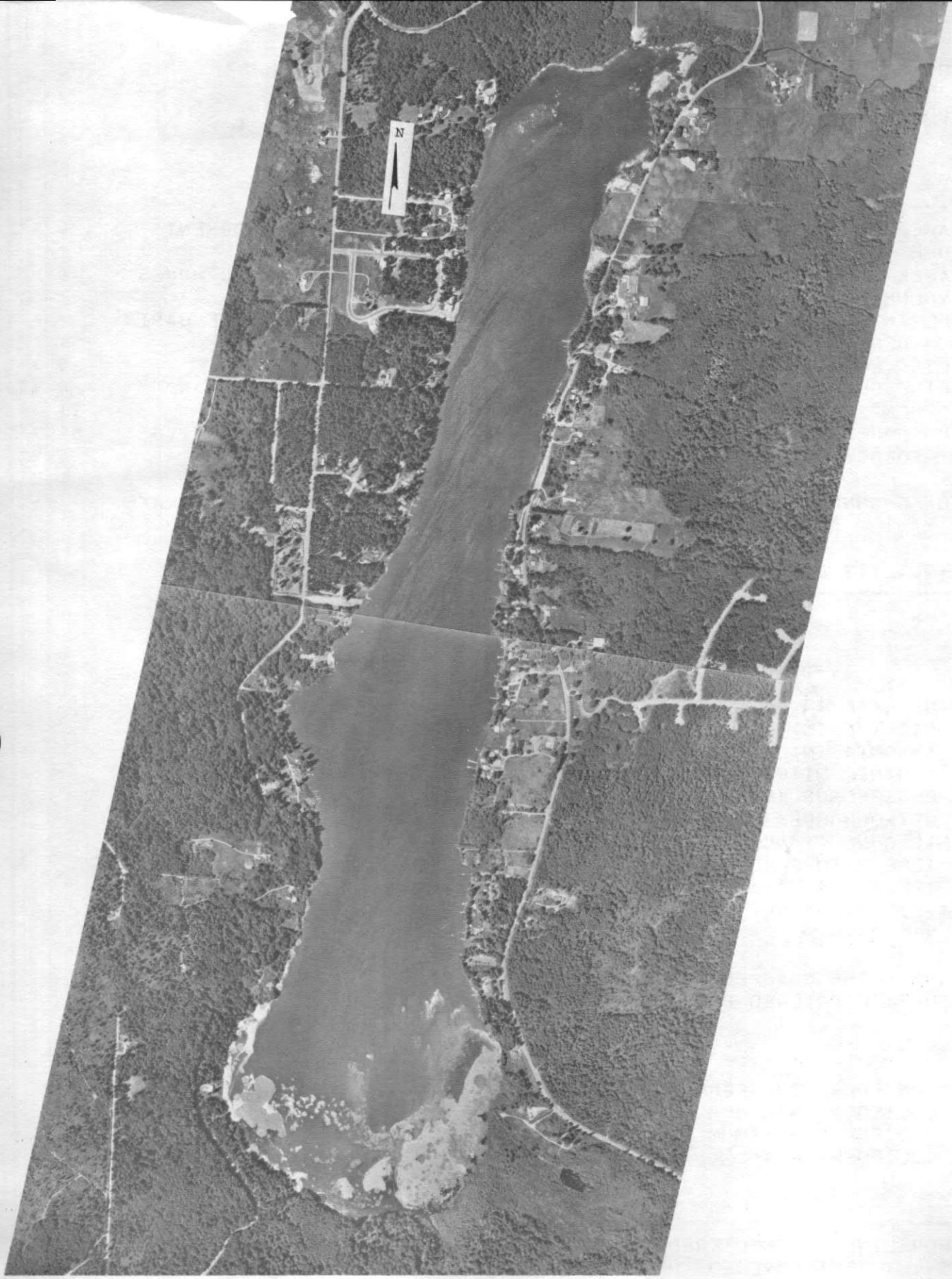
DATE	6/22/73
TIME	1300
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	400
FECAL COLIFORM, MEAN (COL./100ML)	207

REMARKS

A NARROW LAKE THAT STRETCHES TWO MILES IN LENGTH. MOST OF THE EMERSED AND SUBMERSED PLANTS WERE ON THE NORTH AND SOUTH ENDS OF THE LAKE. AN ALGAL BLOOM WAS OBSERVED. IN 1973 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON AUGUST 14, 1973.



Long Lake, Kitsap County. From U.S. Geological Survey, September 13, 1973.



Long Lake, Kitsap County. July 14, 1971. Approx. scale 1:14,000.

MILLER LAKE KITSAP COUNTY

LATITUDE 47°48'56" LONGITUDE 122°33'28" T27N-R2E-21
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.23 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	50. FT		
LAKE AREA	31. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	640. ACRE-FT		
MEAN DEPTH	20. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	30. FT		
SHORELINE LENGTH	0.80 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.0	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.68	AGRICULTURAL	11 %
BOTTOM SLOPE	2.3 %	FOREST OR UNPRODUCTIVE	85 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	4 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

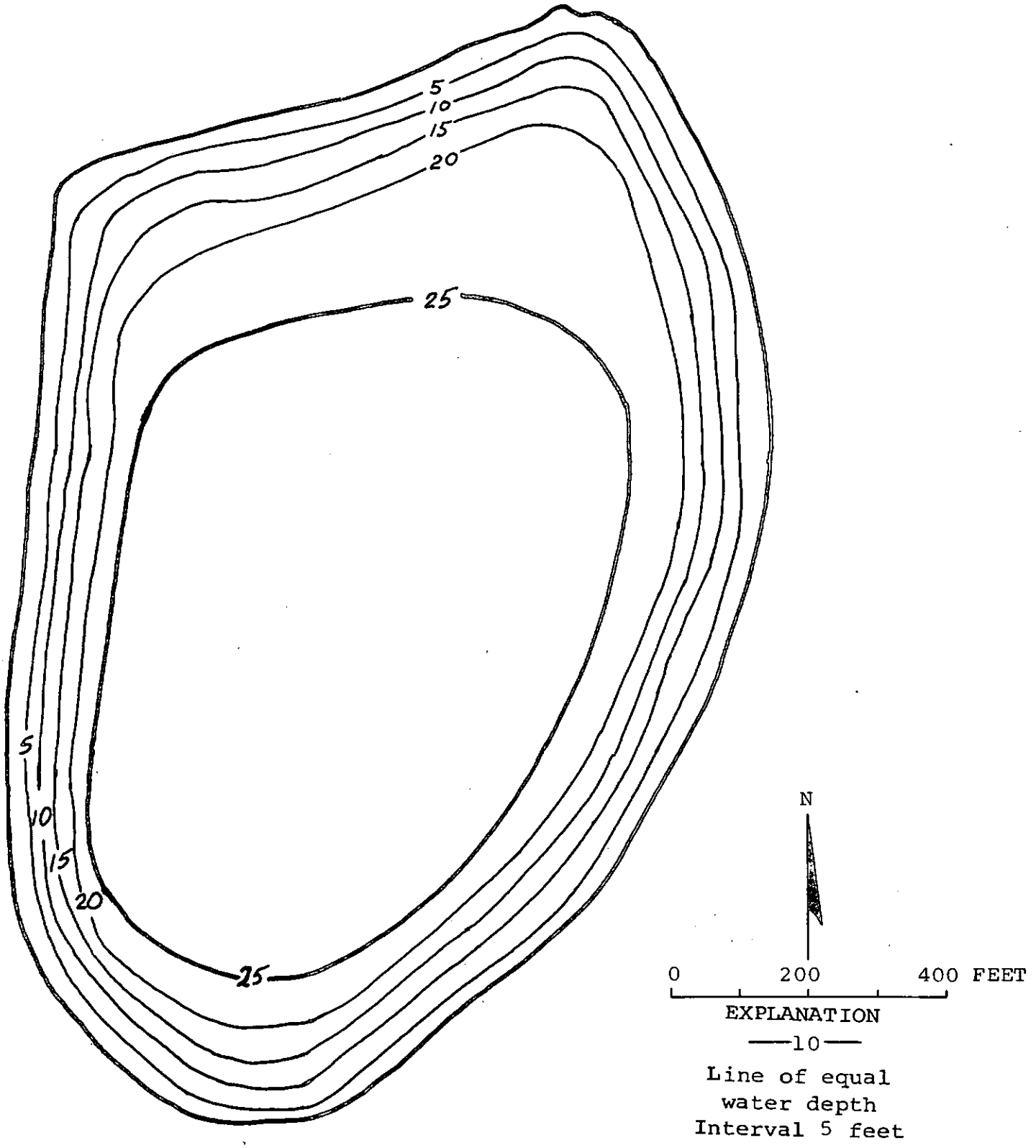
SAMPLE SITE	1	
DATE	8/ 5/74	
TIME	1205	1210
DEPTH (FT)	3.	23.
TOTAL NITRATE (N)	0.02	0.38
TOTAL NITRITE (N)	0.00	0.01
TOTAL AMMONIA (N)	0.15	0.15
TOTAL ORGANIC NITROGEN (N)	0.46	0.41
TOTAL PHOSPHORUS (P)	0.033	0.033
TOTAL ORTHOPHOSPHATE (P)	0.018	0.023
SPECIFIC CONDUCTANCE (MICROMHOS)	73	58
WATER TEMPERATURE (DEG C)	22.9	6.4
COLOR (PLATINUM-COBALT UNITS)	100	100
SECCHI-DISC VISIBILITY (FT)	3	
DISSOLVED OXYGEN	5.6	1.8

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/ 5/74
TIME	1225
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	1
FECAL COLIFORM, MAXIMUM (COL./100ML)	5
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

THE SHORELINE IS SHELTERED BY OVERHANGING TREES AND SHRUBS. EMERSED PLANTS (LILIES) COVERED THE SHORELINE IN A NARROW BAND. THERE WERE MANY LOGS AND SNAGS CLOSE TO SHORE.



Miller Lake, Kitsap County. From U.S. Geological Survey, April 3, 1974.

Miller Lake, Kitsap County. May 4, 1972. Approx. scale 1:12,000.

MISSION LAKE KITSAP COUNTY

LATITUDE 47*31'57" LONGITUDE 122*50' 5" T24N-R1W-32
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.83 SQ MI	RESIDENTIAL DEVELOPMENT	50 %
ALTITUDE	516. FT		
LAKE AREA	88. ACRES	NUMBER OF NEARSHORE HOMES	48
LAKE VOLUME	1000. ACRE-FT		
MEAN DEPTH	12. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	25. FT		
SHORELINE LENGTH	1.9 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.4	RESIDENTIAL SUBURBAN	3 %
DEVELOPMENT OF VOLUME	0.56	AGRICULTURAL	0 %
BOTTOM SLOPE	0.91 %	FOREST OR UNPRODUCTIVE	89 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	8 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

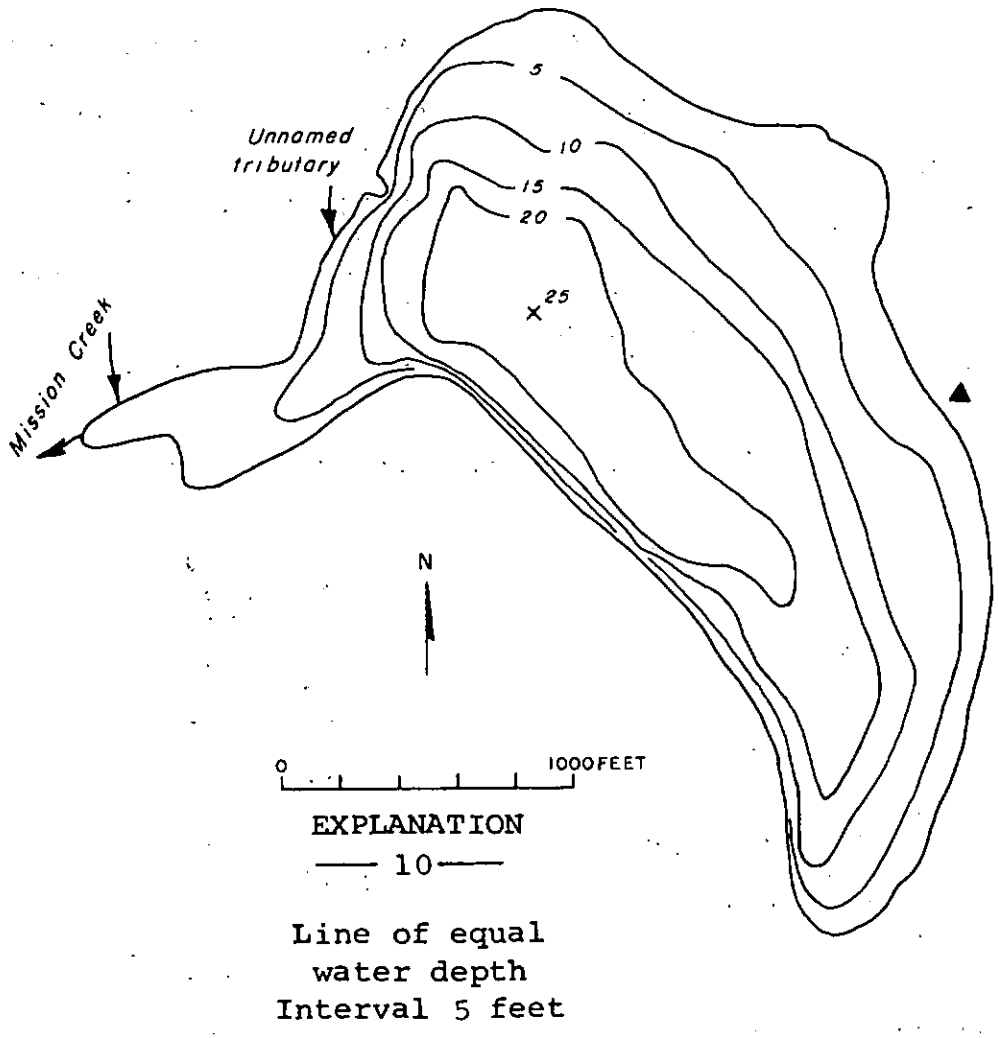
SAMPLE SITE	1	
DATE	10/ 6/70	
TIME	1445	1500
DEPTH (FT)	3.	16.
DISSOLVED NITRATE (N)	0.20	0.30
TOTAL NITRITE (N)	--	--
TOTAL AMMONIA (N)	--	--
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.006	0.006
DISSOLVED ORTHOPHOSPHATE (P)	0.003	0.003
SPECIFIC CONDUCTANCE (MICROMHOS)	80	77
WATER TEMPERATURE (DEG C)	14.9	14.0
COLOR (PLATINUM-COBALT UNITS)	5	--
SECCHI-DISC VISIBILITY (FT)	17	
DISSOLVED OXYGEN	10.3	9.8

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	9/ 5/74
TIME	1330
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

EMERSED PLANTS (CATTAILS AND SEDGES) COVERED MOST OF THE SHORELINE. SUBMERSED PLANTS (ELODEA AND PONDWEED) WERE OBSERVED IN SCATTERED BEDS. IN 1970 THE U.S GEOLOGICAL SURVEY SAMPLED THE LAKE THREE TIMES. THE PLANT SURVEY WAS MADE ON OCTOBER 6, 1970.



Mission Lake, Kitsap County. From Washington Department of Game, June 8, 1946.

Mission Lake, Kitsap County. July 14, 1971. Approx. scale 1:6700.

PANTHER LAKE KITSAP COUNTY

LATITUDE 47*31'33" LONGITUDE 122*51'18" T24N-R1W-31
TAHUYA RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.80 SQ MI	RESIDENTIAL DEVELOPMENT	71 %
ALTITUDE	497. FT		
LAKE AREA	100. ACRES	NUMBER OF NEARSHORE HOMES	59
LAKE VOLUME	1400. ACRE-FT		
MEAN DEPTH	13. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	25. FT		
SHORELINE LENGTH	1.8 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	5 %
DEVELOPMENT OF VOLUME	0.53	AGRICULTURAL	0 %
BOTTOM SLOPE	1.0 %	FOREST OR UNPRODUCTIVE	75 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	20 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

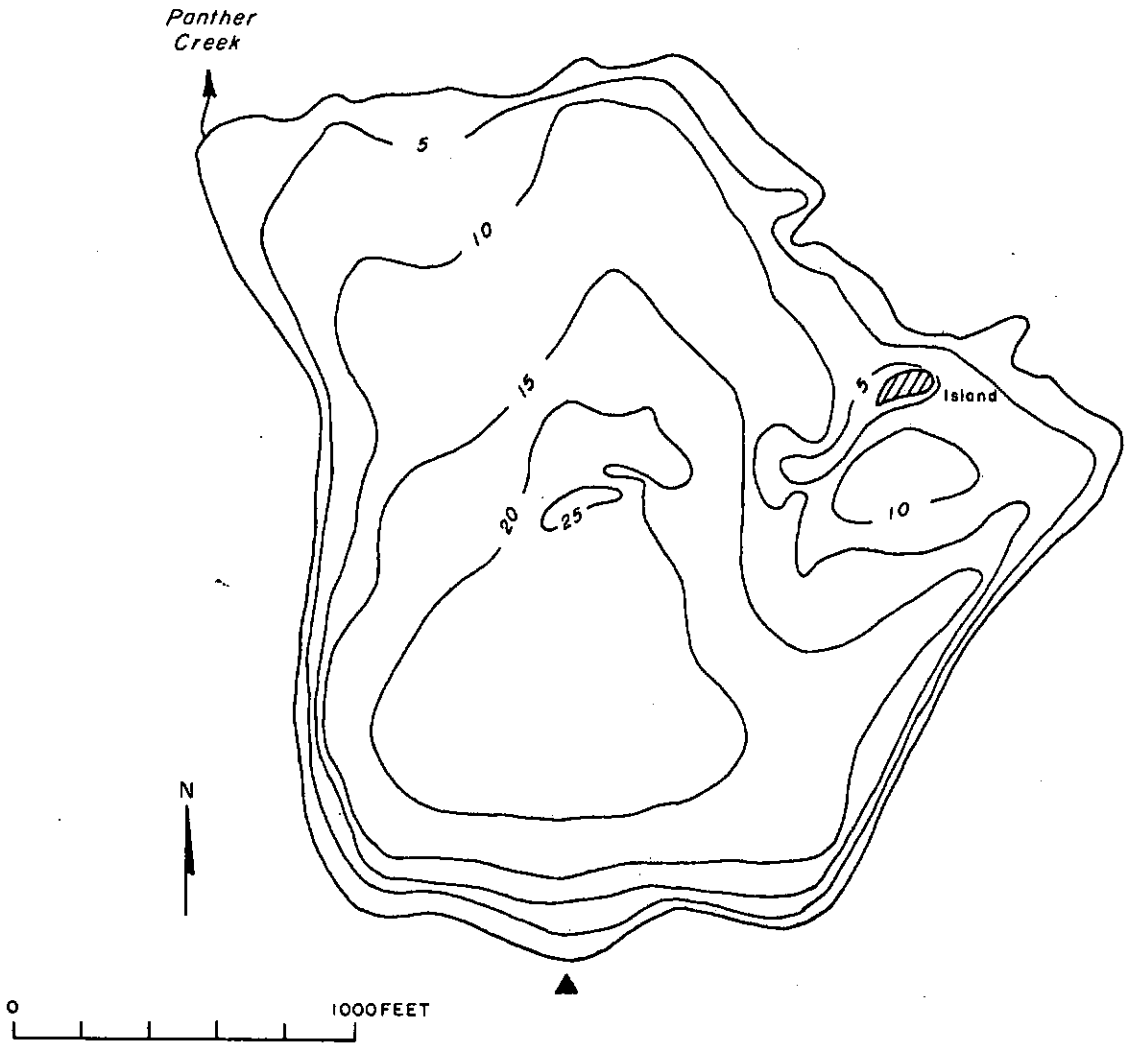
SAMPLE SITE	1	
DATE	10/ 6/70	
TIME	1130	1120
DEPTH (FT)	3.	17.
DISSOLVED NITRATE (N)	0.09	0.00
TOTAL NITRITE (N)	--	--
TOTAL AMMONIA (N)	--	--
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.013	0.020
DISSOLVED ORTHOPHOSPHATE (P)	0.006	0.020
SPECIFIC CONDUCTANCE (MICROMHOS)	22	--
WATER TEMPERATURE (DEG C)	14.9	14.8
COLOR (PLATINUM-COBALT UNITS)	5	--
SECCHI-DISC VISIBILITY (FT)	10	
DISSOLVED OXYGEN	10.1	9.7

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	9/ 5/74
TIME	1320
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

EXCEPT FOR A VERY THIN MARGIN OF EMERSED PLANTS AROUND THE SHORE, VERY FEW AQUATIC MACROPHYTES WERE OBSERVED. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN. IN 1970 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE THREE TIMES. THE PLANT SURVEY WAS MADE ON OCTOBER 6, 1970.

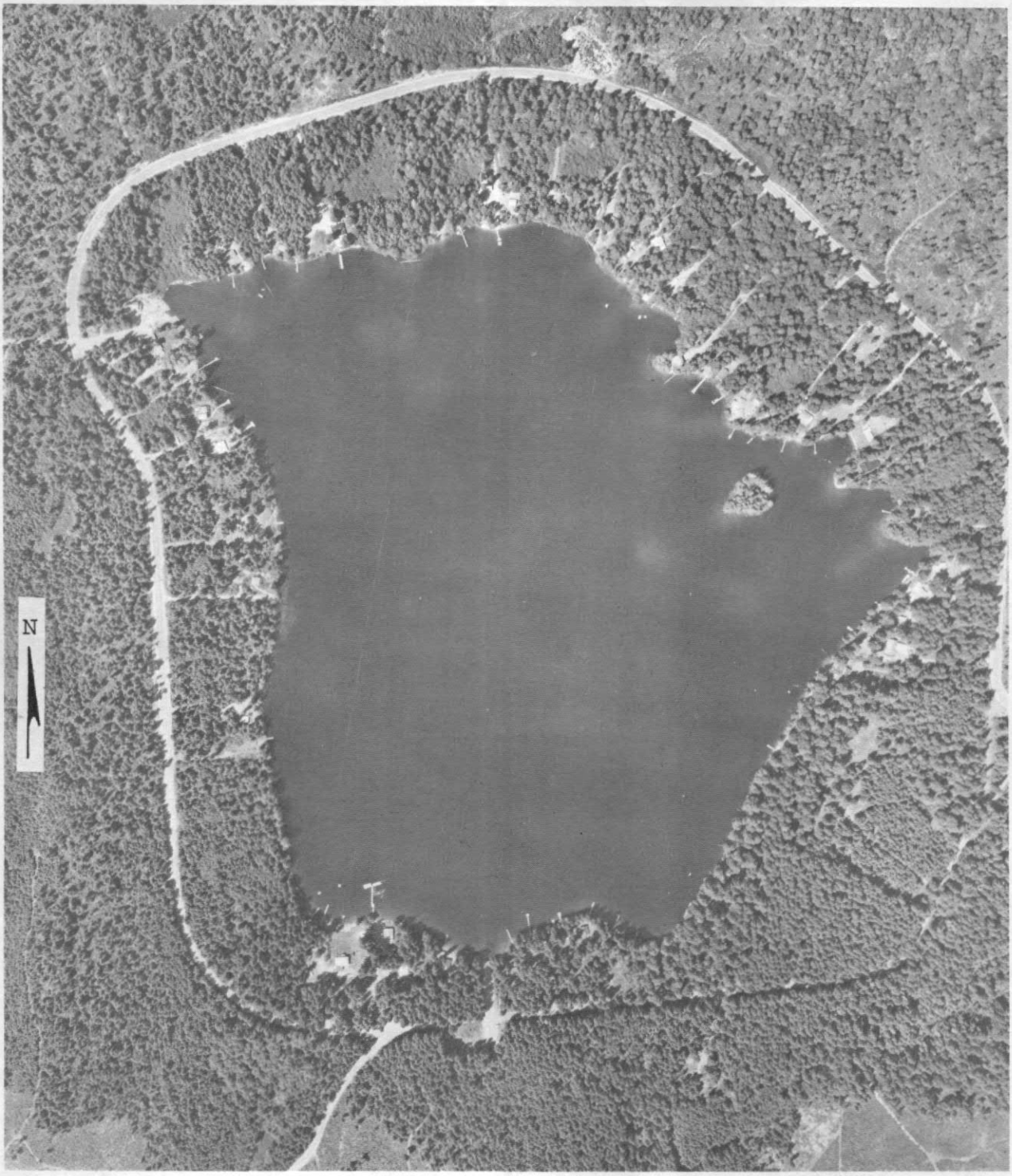


EXPLANATION

— 10 —

Line of equal
water depth
Interval 5 feet

Panther Lake, Kitsap County. From Washington Department of Game, June 2, 1949.



Panther Lake, Kitsap County. July 14, 1971. Approx. scale 1:6500.

TAHUYA LAKE KITSAP COUNTY

LATITUDE 47*33'32" LONGITUDE 122*50' 3" T24N-R1W-20
TAHUYA RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	5.69 SQ MI	RESIDENTIAL DEVELOPMENT	51 %
ALTITUDE	580. FT		
LAKE AREA	150. ACRES	NUMBER OF NEARSHORE HOMES	40
LAKE VOLUME	1100. ACRE-FT		
MEAN DEPTH	7. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	17. FT		
SHORELINE LENGTH	3.7 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.1	RESIDENTIAL SUBURBAN	1 %
DEVELOPMENT OF VOLUME	0.41	AGRICULTURAL	0 %
BOTTOM SLOPE	0.58 %	FOREST OR UNPRODUCTIVE	95 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	4 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

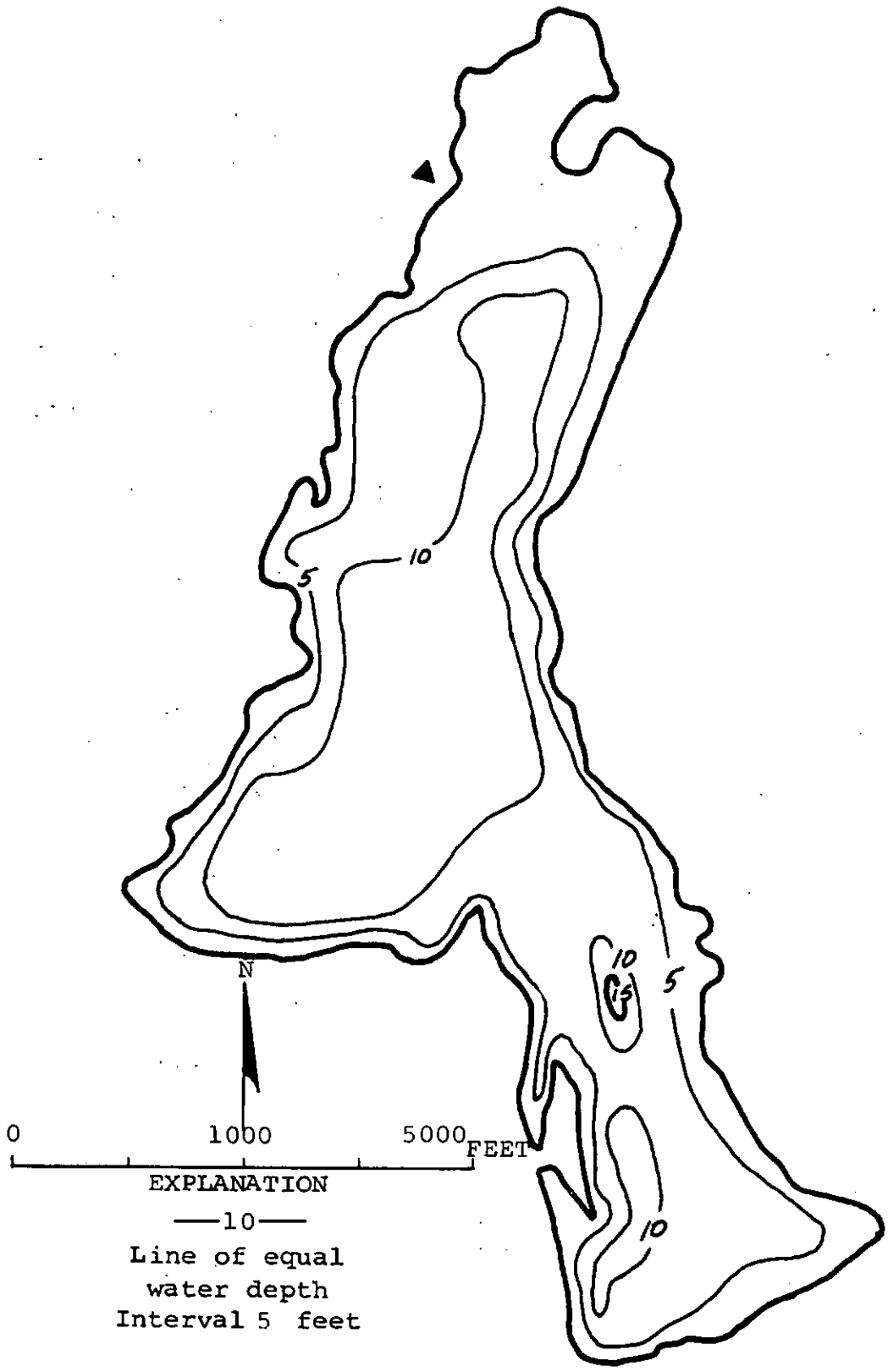
SAMPLE SITE	1	
DATE	9/ 5/74	
TIME	1245	1250
DEPTH (FT)	3.	8.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.04	0.08
TOTAL ORGANIC NITROGEN (N)	0.24	0.17
TOTAL PHOSPHORUS (P)	0.004	0.003
TOTAL ORTHOPHOSPHATE (P)	0.003	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	68	68
WATER TEMPERATURE (DEG C)	20.0	20.0
COLOR (PLATINUM-COBALT UNITS)	15	20
SECCHI-DISC VISIBILITY (FT)	8	
DISSOLVED OXYGEN	6.9	6.5

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	51- 75 %

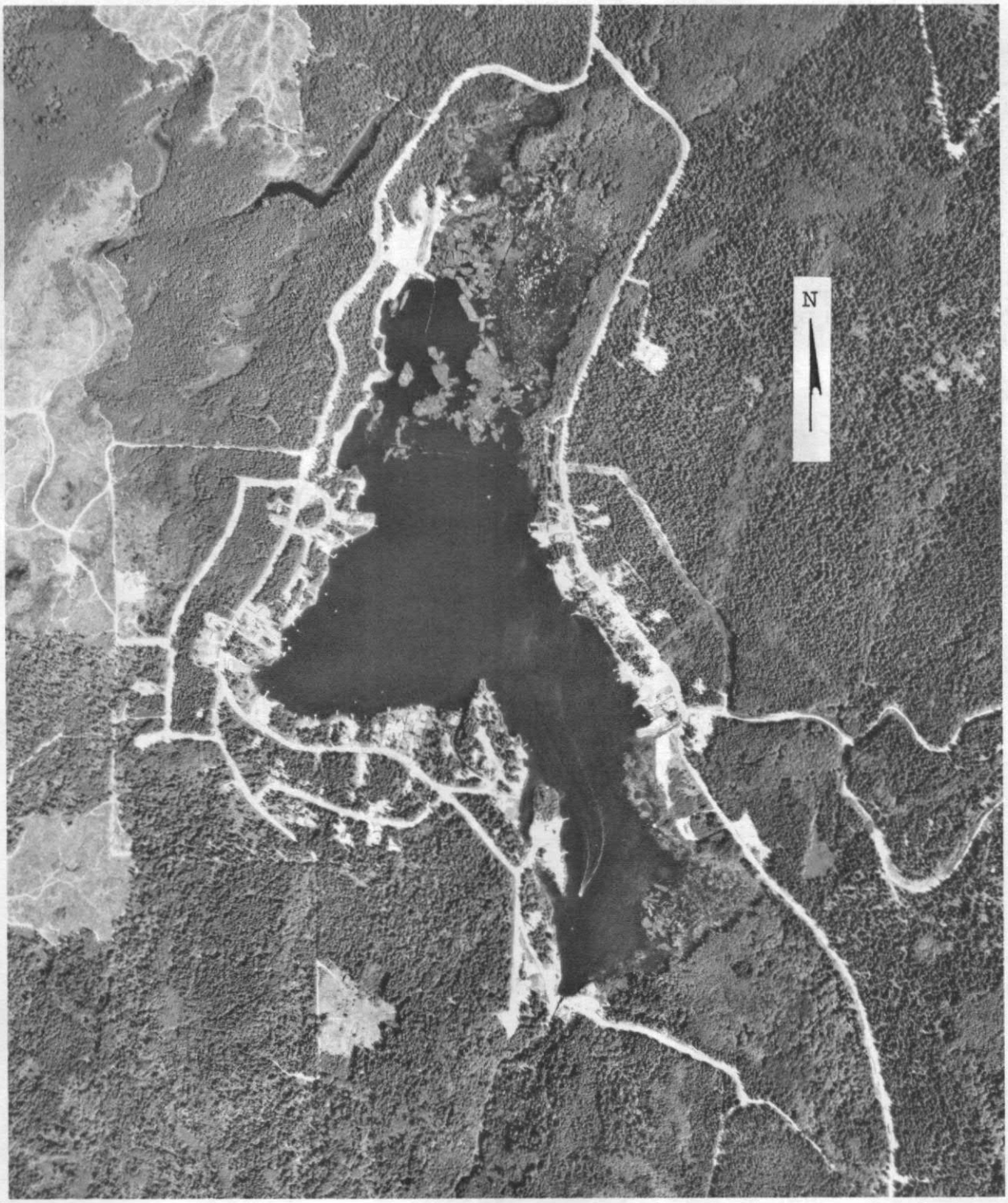
DATE	9/ 5/74
TIME	1300
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	9
FECAL COLIFORM, MEAN (COL./100ML)	5

REMARKS

THE ORIGINAL LAKE WHICH WAS SURROUNDED BY A LARGE MARSH HAS BEEN ENLARGED BY A DAM ON THE TAHUYA RIVER. THE LAKE HAD A DENSE COVER OF BOTH EMERSED AND SUBMERSED PLANTS. MOST OF THE LAKE BOTTOM WAS COVERED WITH SUBMERSED AQUATIC PLANTS.



Tahuya Lake, Kitsap County. From U.S. Geological Survey, February 19, 1974.



Tahuya Lake, Kitsap County. May 28, 1972. Approx. scale 1:12,000.

TWIN LAKE KITSAP COUNTY

LATITUDE 47°31'12" LONGITUDE 122°45'40" T23N-R1W-2
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.42 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	272. FT		
LAKE AREA	9. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	88. ACRE-FT		
MEAN DEPTH	10. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	15. FT		
SHORELINE LENGTH	0.46 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.1	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.67	AGRICULTURAL	0 %
BOTTOM SLOPE	2.1 %	FOREST OR UNPRODUCTIVE	97 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	3 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

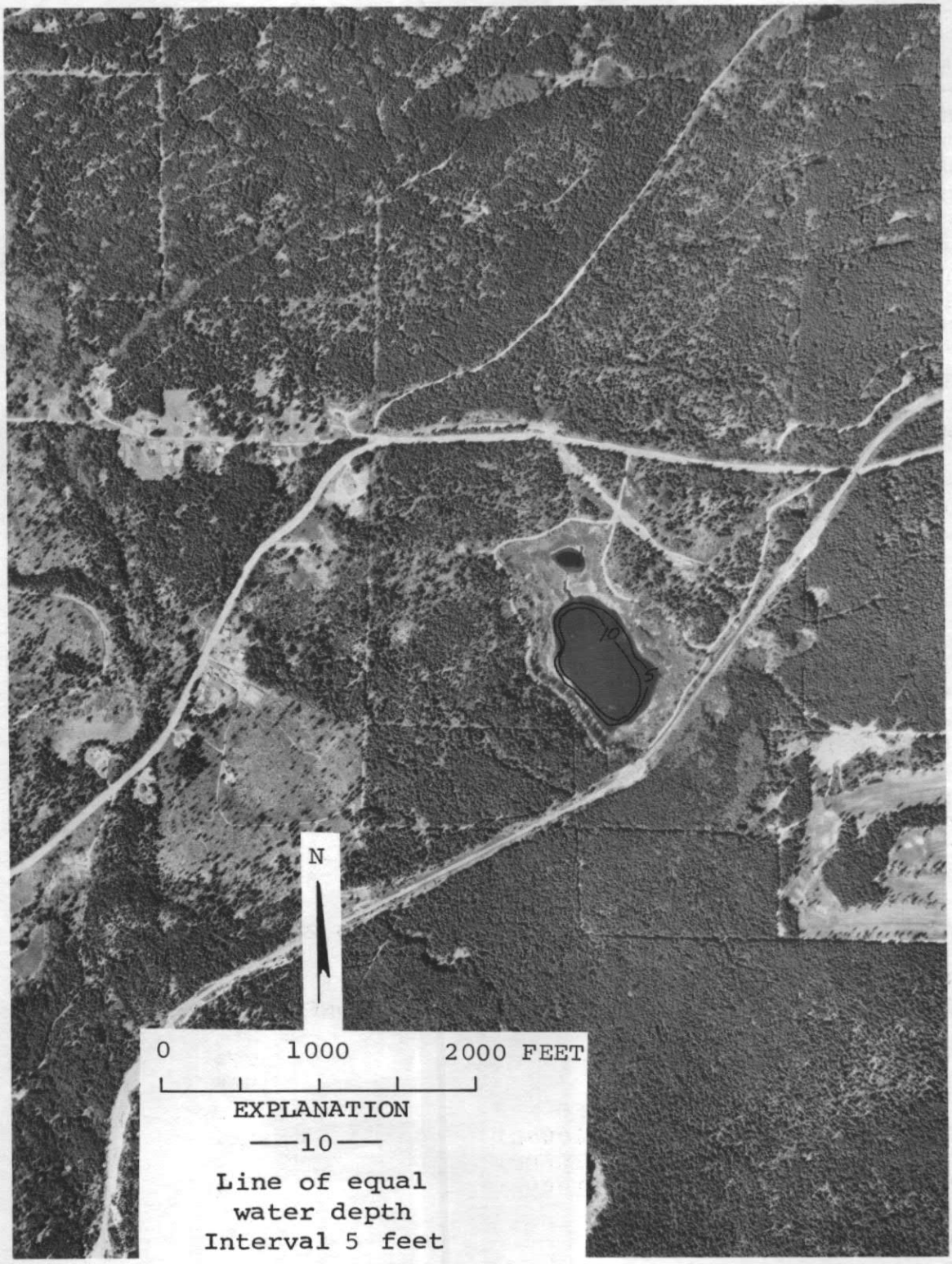
SAMPLE SITE	1	
DATE	9/ 5/74	
TIME	1430	1435
DEPTH (FT)	3.	16.
TOTAL NITRATE (N)	0.01	0.00
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.02	0.03
TOTAL ORGANIC NITROGEN (N)	0.16	0.14
TOTAL PHOSPHORUS (P)	0.005	0.006
TOTAL ORTHOPHOSPHATE (P)	0.003	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	46	46
WATER TEMPERATURE (DEG C)	21.8	21.6
COLOR (PLATINUM-COBALT UNITS)	5	5
SECCHI-DISC VISIBILITY (FT)	9	
DISSOLVED OXYGEN	7.8	7.4

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	9/ 5/74
TIME	1445
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	3
FECAL COLIFORM, MAXIMUM (COL./100ML)	5
FECAL COLIFORM, MEAN (COL./100ML)	4

REMARKS

FEW AQUATIC MACROPHYTES WERE OBSERVED. TREES AND SHRUBS OVERHANG THE SHORELINE.



Twin Lake, Kitsap County. Bathymetric map from U.S. Geological Survey, February 22, 1974. Aerial photo, May 4, 1972.

UNION RIVER LAKE KITSAP COUNTY

LATITUDE 47°32'14" LONGITUDE 122°46'42" T24N-R1W-27
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	3.00 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	640. FT		
LAKE AREA	92. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	4100. ACRE-FT		
MEAN DEPTH	45. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	130. FT		
SHORELINE LENGTH	3.1 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.3	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.35	AGRICULTURAL	0 %
BOTTOM SLOPE	5.8 %	FOREST OR UNPRODUCTIVE	95 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	5 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

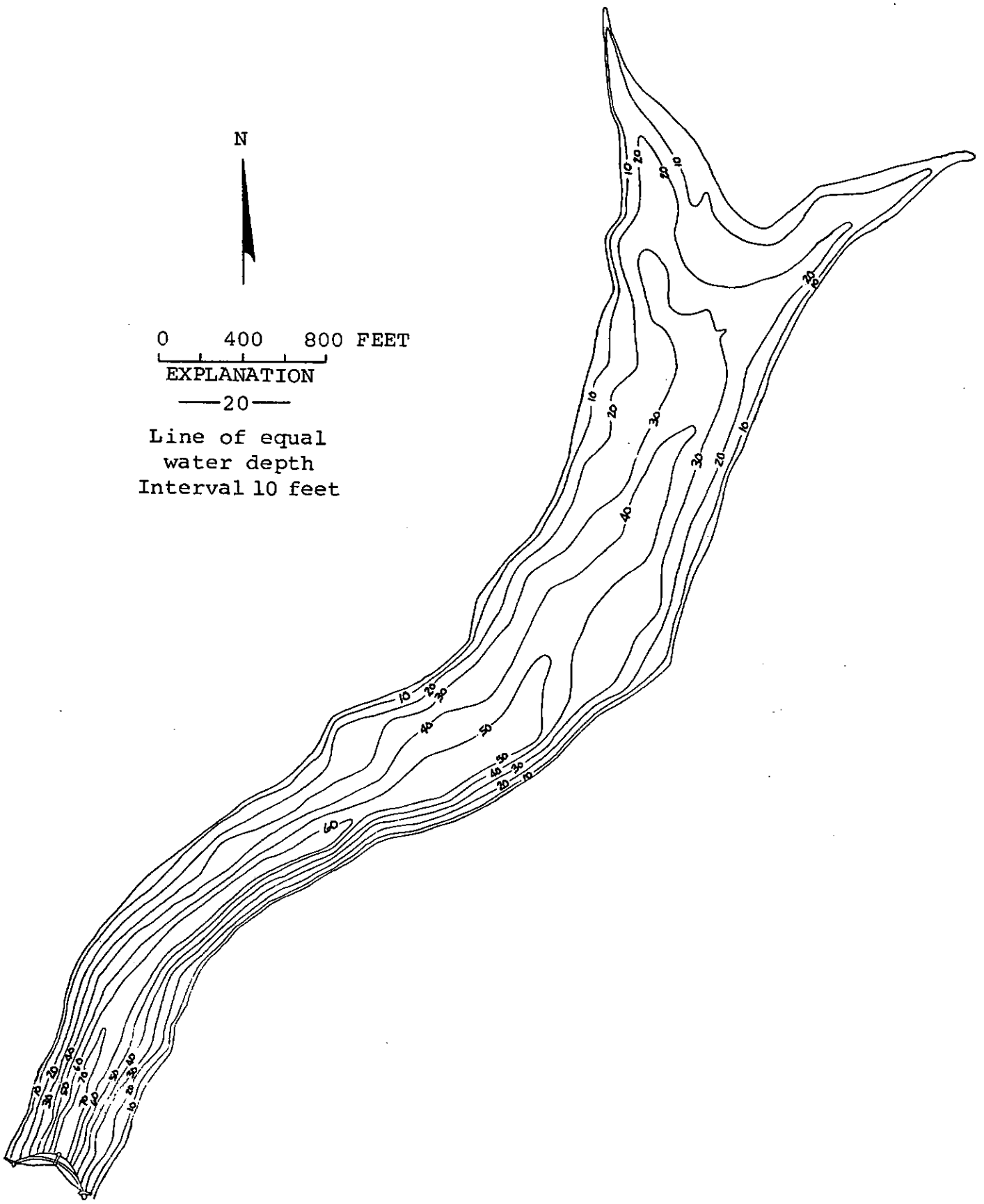
SAMPLE SITE	1	
DATE	9/ 5/74	
TIME	1530	1535
DEPTH (FT)	3.	72.
TOTAL NITRATE (N)	0.01	0.08
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.02	0.05
TOTAL ORGANIC NITROGEN (N)	0.09	0.05
TOTAL PHOSPHORUS (P)	0.003	0.004
TOTAL ORTHOPHOSPHATE (P)	0.002	0.001
SPECIFIC CONDUCTANCE (MICROMHOS)	71	69
WATER TEMPERATURE (DEG C)	19.3	8.0
COLOR (PLATINUM-COBALT UNITS)	5	5
SECCHI-DISC VISIBILITY (FT)	26	
DISSOLVED OXYGEN	9.2	4.1

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

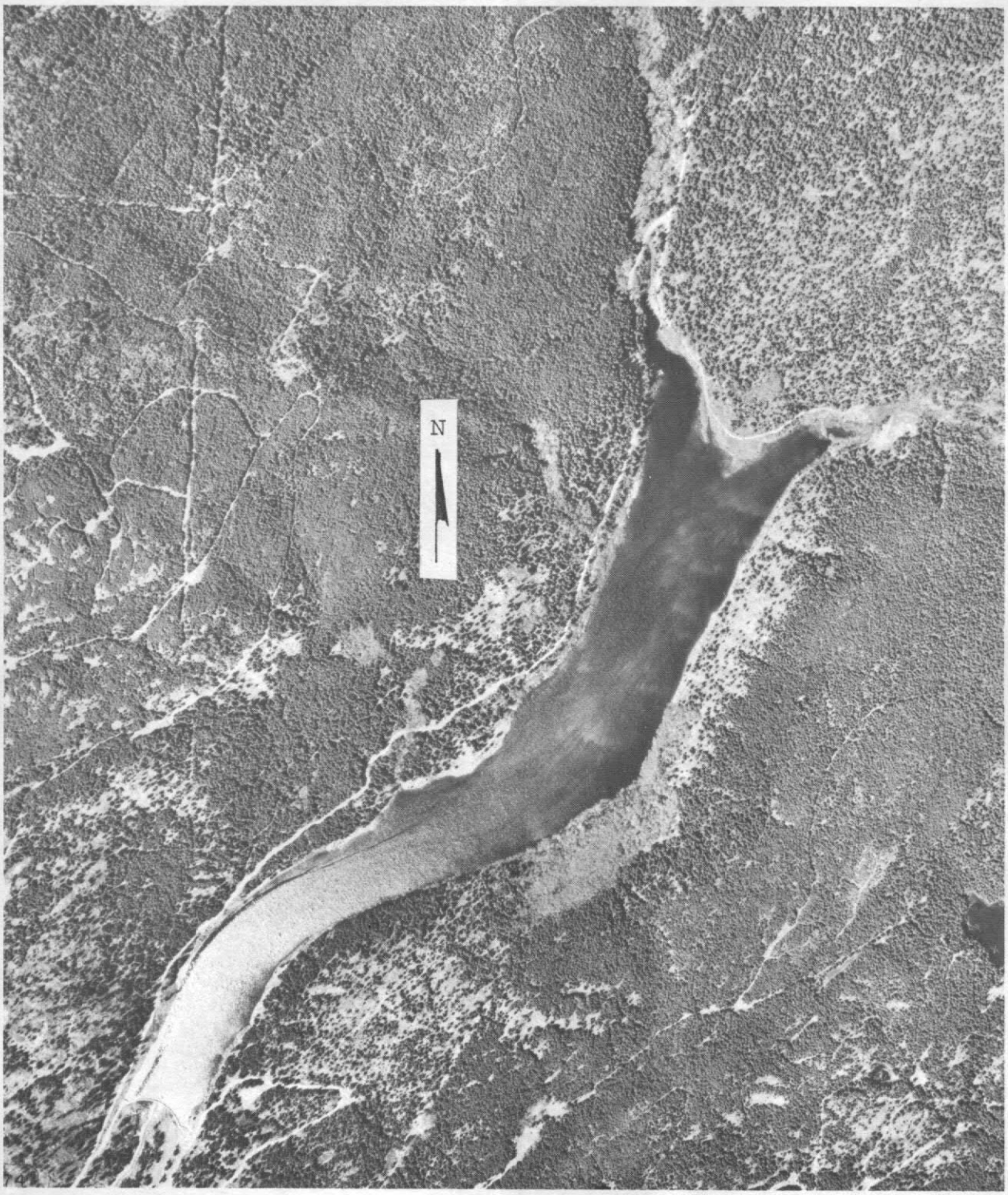
DATE	9/ 5/74
TIME	1545
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	4
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

A WATER-SUPPLY RESERVOIR FOR THE CITY OF BREMERTON CREATED BY A DAM ON THE UNION RIVER. THE SHORELINE IS A STEEP GRAVEL BANK. NO AQUATIC MACROPHYTES WERE OBSERVED.



Union River Lake, Kitsap County. From City of Bremerton, date unknown.



Union River Lake, Kitsap County. May 4, 1972. Approx. scale 1:12,000.

WILDCAT LAKE KITSAP COUNTY

LATITUDE 47*35'59" LONGITUDE 122*45'35" T24N-R1W-2
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	2.50 SQ MI	RESIDENTIAL DEVELOPMENT	84 %
ALTITUDE	377. FT		
LAKE AREA	120. ACRES	NUMBER OF NEARSHORE HOMES	75
LAKE VOLUME	2200. ACRE-FT		
MEAN DEPTH	18. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	33. FT		
SHORELINE LENGTH	2.2 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.4	RESIDENTIAL SUBURBAN	6 %
DEVELOPMENT OF VOLUME	0.58	AGRICULTURAL	<1 %
BOTTOM SLOPE	1.2 %	FOREST OR UNPRODUCTIVE	86 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	8 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

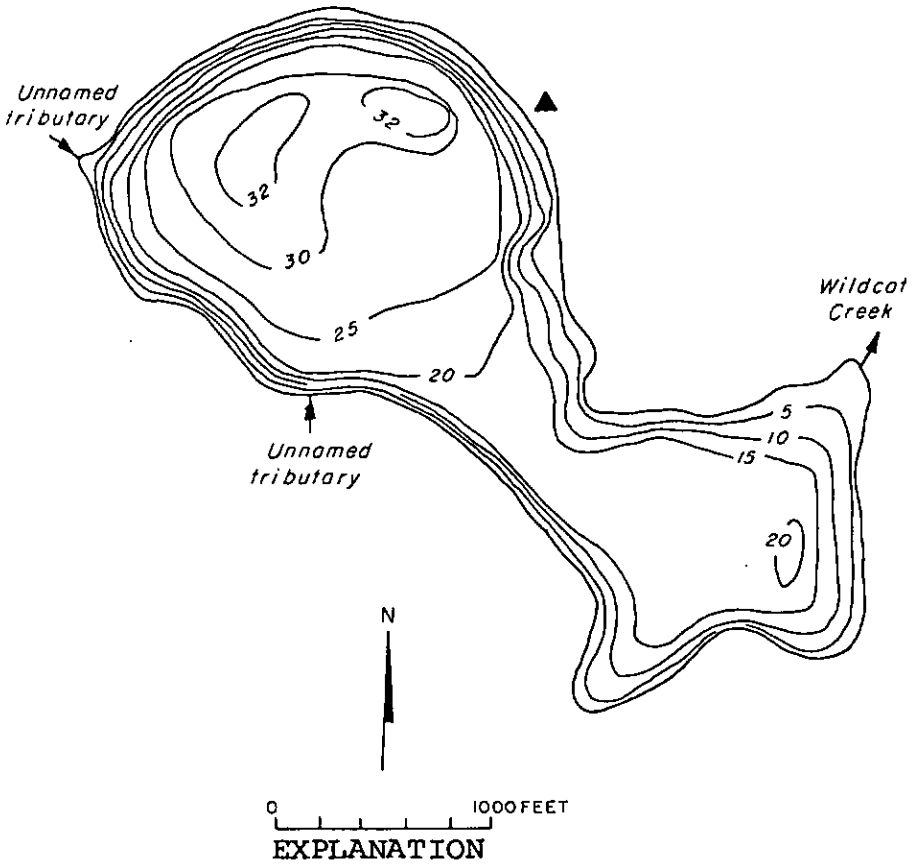
SAMPLE SITE	1	
DATE	9/ 8/71	
TIME	915	925
DEPTH (FT)	3.	27.
DISSOLVED NITRATE (N)	0.09	0.09
TOTAL NITRITE (N)	--	--
TOTAL AMMONIA (N)	0.07	0.04
TOTAL ORGANIC NITROGEN (N)	0.10	0.08
TOTAL PHOSPHORUS (P)	0.010	0.020
DISSOLVED ORTHOPHOSPHATE (P)	0.000	0.000
SPECIFIC CONDUCTANCE (MICROMHOS)	44	52
WATER TEMPERATURE (DEG C)	18.8	10.0
COLOR (PLATINUM-COBALT UNITS)	10	25
SECCHI-DISC VISIBILITY (FT)	13	
DISSOLVED OXYGEN	9.2	0.5

LAKE SHORELINE COVERED BY EMERSED PLANTS	51- 75 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	9/ 5/74
TIME	1050
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	5
FECAL COLIFORM, MAXIMUM (COL./100ML)	7
FECAL COLIFORM, MEAN (COL./100ML)	6

REMARKS

IN 1971 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON SEPTEMBER 8, 1971.



Wildcat Lake, Kitsap County. From Washington Department of Game, June 11, 1946.

Wildcat Lake, Kitsap County. May 4, 1972. Approx. scale 1:12,000.

WILLIAM SYMINGTON LAKE KITSAP COUNTY

LATITUDE 47*35'56" LONGITUDE 122*49'27" T24N-R1W-5
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	6.95 SQ MI	RESIDENTIAL DEVELOPMENT	19 %
ALTITUDE	390. FT		
LAKE AREA	60. ACRES	NUMBER OF NEARSHORE HOMES	10
LAKE VOLUME	420. ACRE-FT		
MEAN DEPTH	7. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	23. FT		
SHORELINE LENGTH	2.7 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.5	RESIDENTIAL SUBURBAN	1 %
DEVELOPMENT OF VOLUME	0.31	AGRICULTURAL	3 %
BOTTOM SLOPE	1.3 %	FOREST OR UNPRODUCTIVE	95 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	1 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

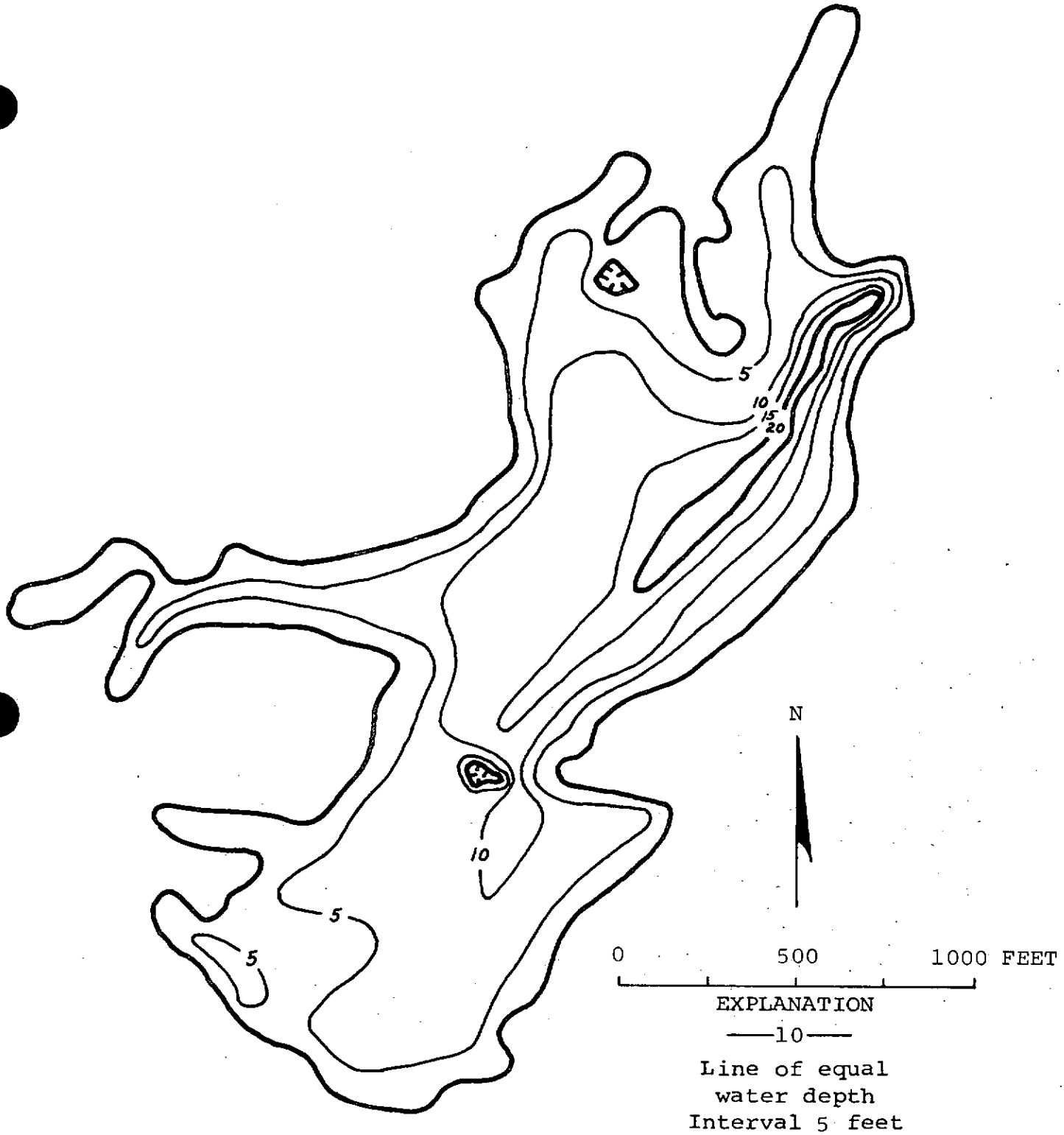
SAMPLE SITE	1	
DATE	9/ 5/74	
TIME	1135	1140
DEPTH (FT)	3.	8.
TOTAL NITRATE (N)	0.00	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.08	0.05
TOTAL ORGANIC NITROGEN (N)	0.26	0.34
TOTAL PHOSPHORUS (P)	0.013	0.013
TOTAL ORTHOPHOSPHATE (P)	0.004	0.003
SPECIFIC CONDUCTANCE (MICROMHOS)	58	57
WATER TEMPERATURE (DEG C)	20.6	20.3
COLOR (PLATINUM-COBALT UNITS)	20	20
SECCHI-DISC VISIBILITY (FT)	8	
DISSOLVED OXYGEN	6.9	6.5

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	9/ 5/74
TIME	1250
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	5
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

AN ARTIFICIAL LAKE CREATED BY A DAM ON BIG BEEF CREEK. EMERSED PLANTS COVERED THE SHORELINE. SUBMERSED PLANTS WERE OBSERVED IN THE BAY AREAS AND AT THE SOUTH END OF THE LAKE.



William Symington Lake, Kitsap County.
From U.S. Geological Survey, February 22, 1974.

William Symington Lake, Kitsap County.
May 28, 1972. Approx. scale 1:12,000.

WYE LAKE KITSAP COUNTY

LATITUDE 47°25'22" LONGITUDE 122°45'27" T22N-R1W-2
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.06 SQ MI	RESIDENTIAL DEVELOPMENT	99 %
ALTITUDE	300. FT		
LAKE AREA	39. ACRES	NUMBER OF NEARSHORE HOMES	96
LAKE VOLUME	370. ACRE-FT		
MEAN DEPTH	10. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	15. FT		
SHORELINE LENGTH	1.7 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.0	RESIDENTIAL SUBURBAN	20 %
DEVELOPMENT OF VOLUME	0.64	AGRICULTURAL	0 %
BOTTOM SLOPE	1.0 %	FOREST OR UNPRODUCTIVE	74 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	6 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

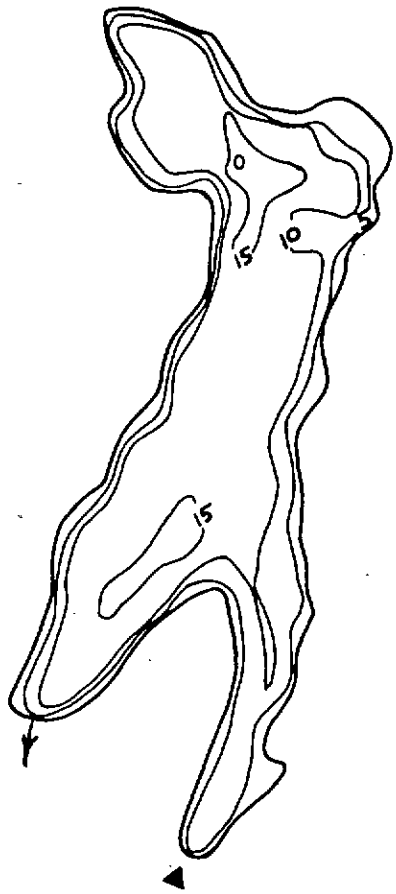
SAMPLE SITE	1	
DATE	6/29/72	
TIME	740	750
DEPTH (FT)	3.	12.
TOTAL NITRATE (N)	0.00	0.00
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.02	0.00
TOTAL ORGANIC NITROGEN (N)	0.23	0.17
TOTAL PHOSPHORUS (P)	0.010	0.020
TOTAL ORTHOPHOSPHATE (P)	0.010	0.000
SPECIFIC CONDUCTANCE (MICROMHOS)	18	18
WATER TEMPERATURE (DEG C)	18.5	18.5
COLOR (PLATINUM-COBALT UNITS)	10	10
SECCHI-DISC VISIBILITY (FT)	14	
DISSOLVED OXYGEN	9.1	8.9

LAKE SHORELINE COVERED BY EMERSED PLANTS	1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	6/29/72
TIME	800
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	3
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

THE GRAVEL BOTTOM IN THE LITTORAL ZONE SUPPORTED A SPARSE GROWTH OF AQUATIC MACROPHYTES. IN 1972 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON OCTOBER 17, 1972.



N

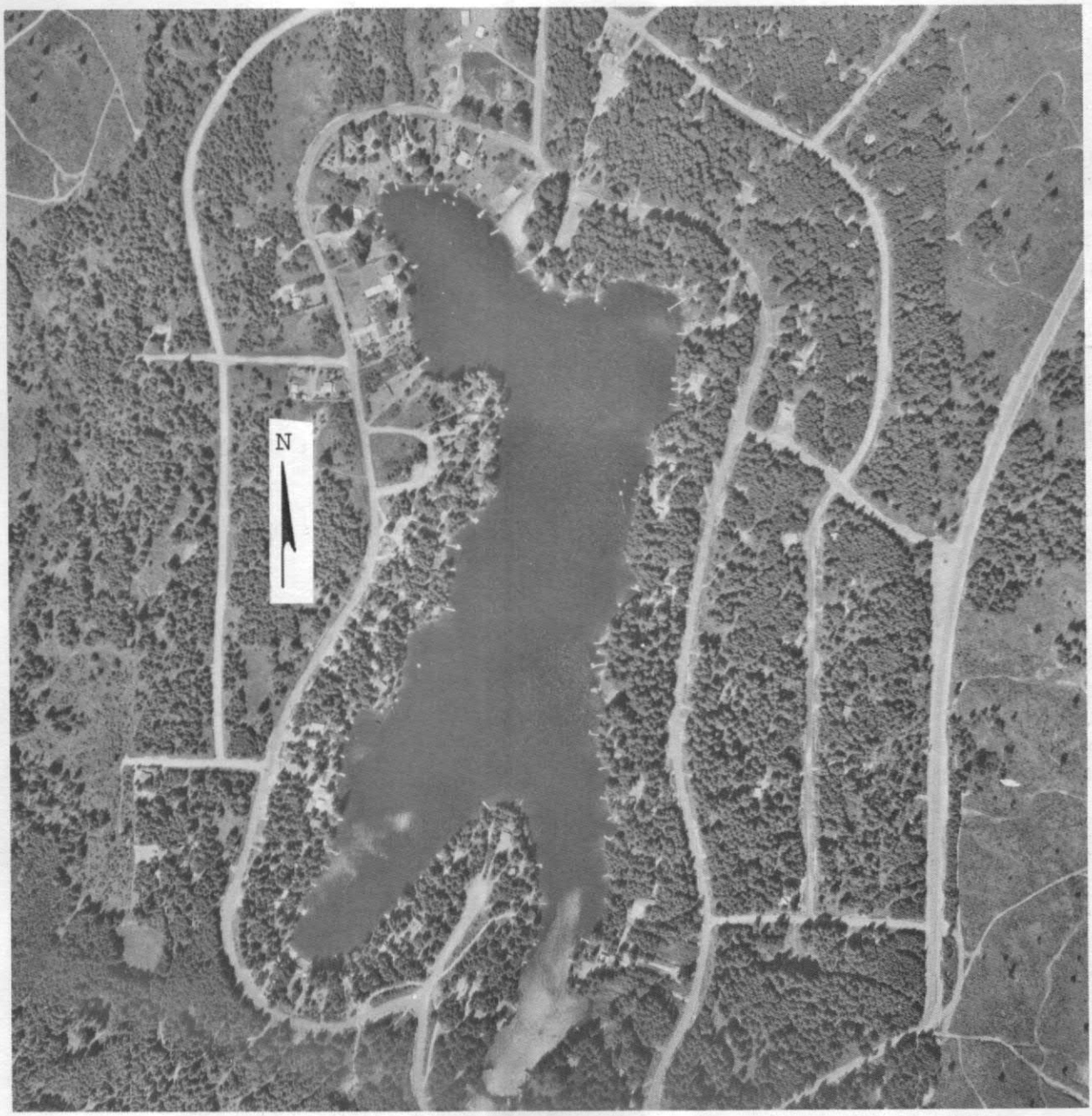
0 1000 2000 FEET

EXPLANATION

—10—

Line of equal
water depth
Interval 5 feet

Wye Lake, Kitsap County. From Washington Department of Game, June 4, 1949.



Wye Lake, Kitsap County. August 9, 1972. Approx. scale 1:6800.

BENNETTSEN LAKE MASON COUNTY

LATITUDE 47°28'11" LONGITUDE 122°57'27" T23N-R2W-20
TAHUYA RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.18 SQ MI	RESIDENTIAL DEVELOPMENT	6 %
ALTITUDE	38. FT		
LAKE AREA	28. ACRES	NUMBER OF NEARSHORE HOMES	2
LAKE VOLUME	310. ACRE-FT		
MEAN DEPTH	11. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	20. FT		
SHORELINE LENGTH	1.1 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.4	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.56	AGRICULTURAL	0 %
BOTTOM SLOPE	1.6 %	FOREST OR UNPRODUCTIVE	76 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	24 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

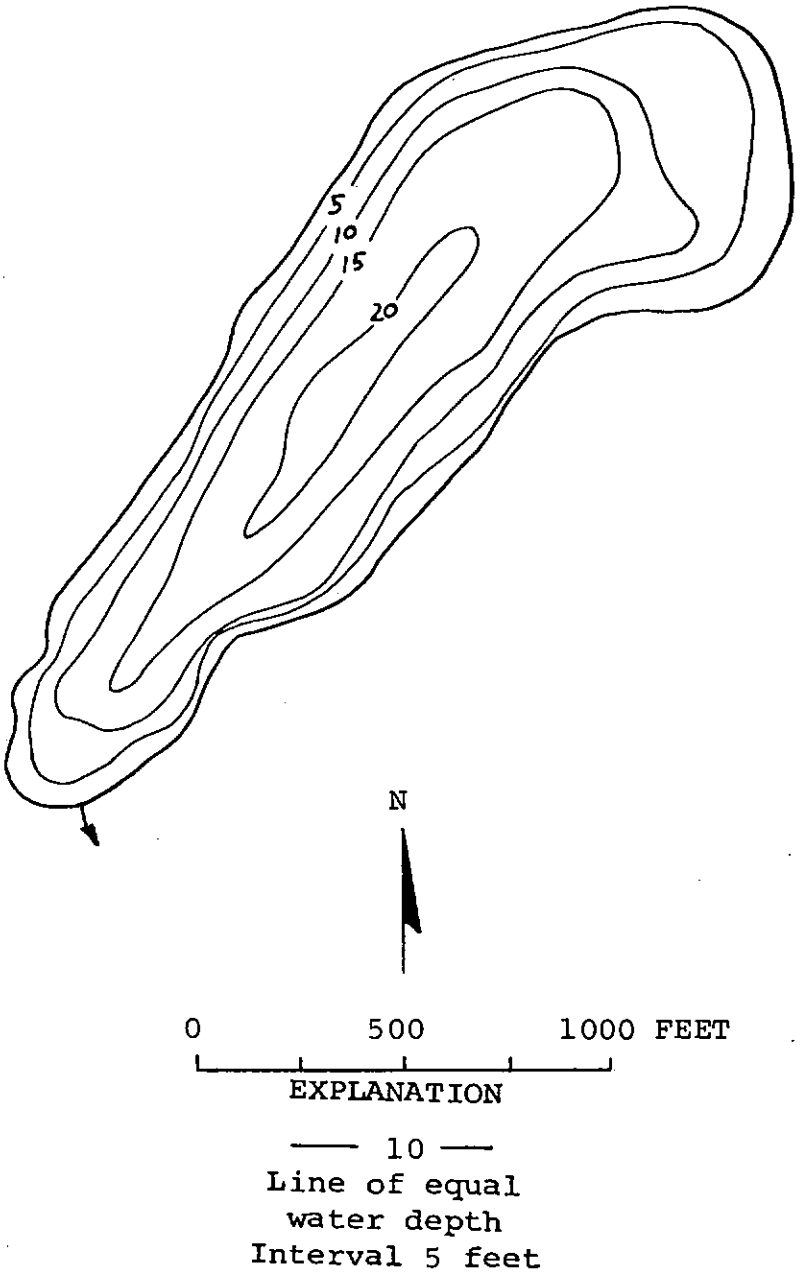
SAMPLE SITE	1	
DATE	8/22/74	
TIME	1040	1045
DEPTH (FT)	3.	13.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.08	0.07
TOTAL ORGANIC NITROGEN (N)	0.59	0.50
TOTAL PHOSPHORUS (P)	0.007	0.016
TOTAL ORTHOPHOSPHATE (P)	0.003	0.003
SPECIFIC CONDUCTANCE (MICROMHOS)	19	19
WATER TEMPERATURE (DEG C)	20.0	19.8
COLOR (PLATINUM-COBALT UNITS)	15	10
SECCHI-DISC VISIBILITY (FT)	9	
DISSOLVED OXYGEN	8.2	7.9

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/22/74
TIME	1055
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

THE LAKESHORE IS OCCUPIED BY A GIRL SCOUT CAMP. THE SHORELINE WAS COVERED BY A THIN MARGIN OF EMERSED PLANTS. THE LITTORAL BOTTOM IS MOSTLY SILT.



Bennettsen Lake, Mason County. From Washington Department of Game, March 1, 1951.

Bennettsen Lake, Mason County. June 29, 1974. Approx. scale 1:4800.

BENSON LAKE MASON COUNTY

LATITUDE 47°19'58" LONGITUDE 122°55'22" T21N-R2W-3
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.63 SQ MI	RESIDENTIAL DEVELOPMENT	95 %
ALTITUDE	222. FT		
LAKE AREA	82. ACRES	NUMBER OF NEARSHORE HOMES	93
LAKE VOLUME	1900. ACRE-FT		
MEAN DEPTH	23. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	35. FT		
SHORELINE LENGTH	1.7 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.3	RESIDENTIAL SUBURBAN	6 %
DEVELOPMENT OF VOLUME	0.64	AGRICULTURAL	0 %
BOTTOM SLOPE	1.6 %	FOREST OR UNPRODUCTIVE	74 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	20 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

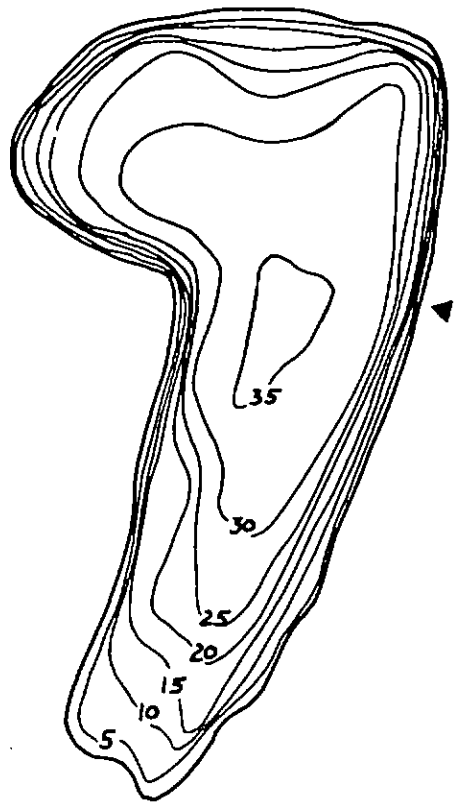
SAMPLE SITE	1	
DATE	8/27/74	
TIME	1030	1035
DEPTH (FT)	3.	28.
TOTAL NITRATE (N)	0.00	0.00
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.04	0.04
TOTAL ORGANIC NITROGEN (N)	0.13	0.22
TOTAL PHOSPHORUS (P)	0.008	0.008
TOTAL ORTHOPHOSPHATE (P)	0.003	0.004
SPECIFIC CONDUCTANCE (MICROMHOS)	18	18
WATER TEMPERATURE (DEG C)	21.5	20.8
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	15	
DISSOLVED OXYGEN	8.8	8.6

LAKE SHORELINE COVERED BY EMERSED PLANTS	1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/27/74
TIME	1030
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	5
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

THE LAKE IS TIGHTLY SURROUNDED BY RESIDENTIAL HOMES. VERY FEW AQUATIC MACROPHYTES WERE SUPPORTED ON THE GRAVEL AND SAND LITTORAL BOTTOM.



N

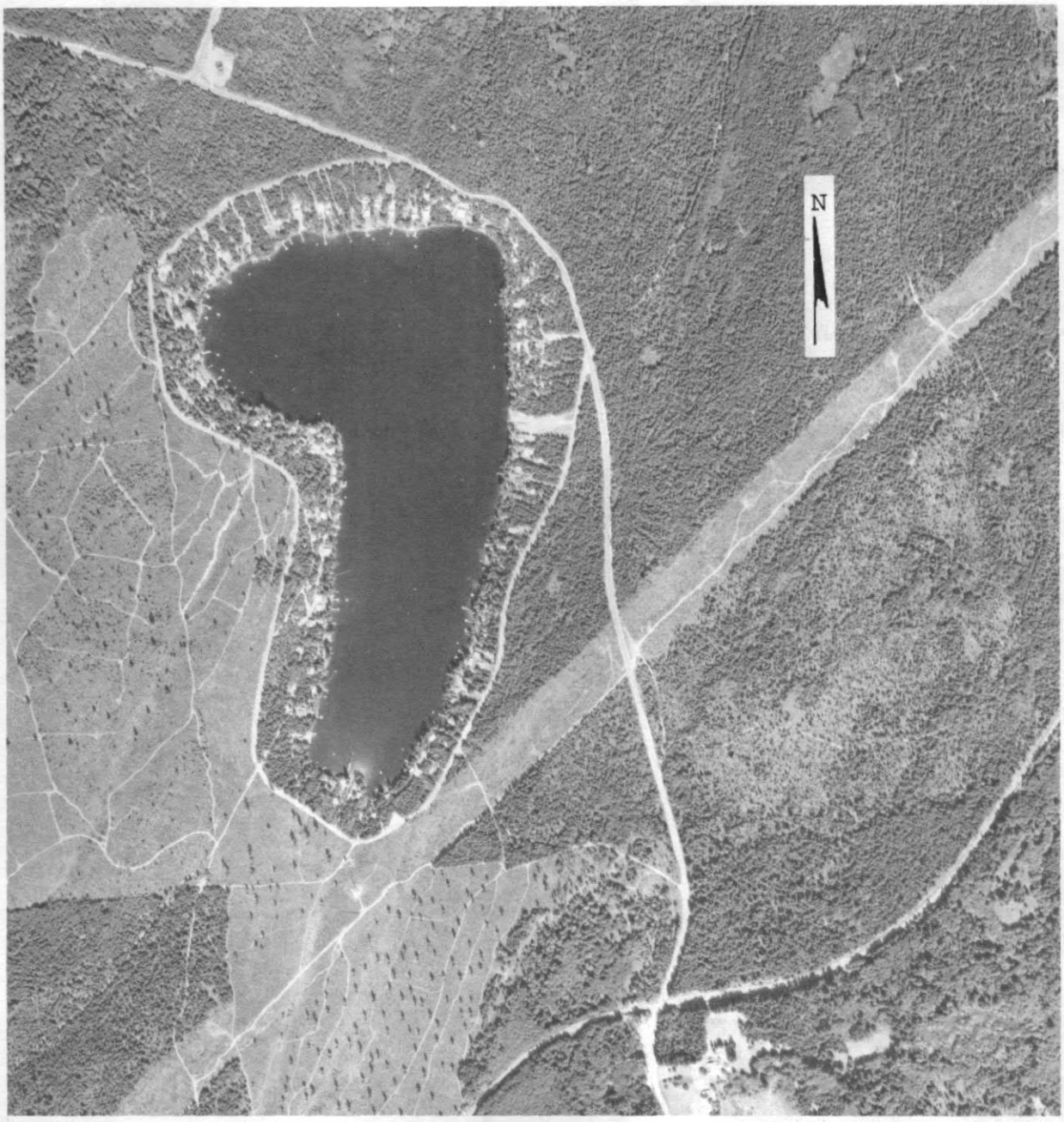
0 1000 2000 FEET

EXPLANATION

— 10 —

Line of equal
water depth
Interval 5 feet

Benson Lake, Mason County. From Washington Department of Game, August 5, 1951.



Benson Lake, Mason County. September 3, 1973. Approx. scale 1:12,000.

CRANBERRY LAKE MASON COUNTY

LATITUDE 47*17' 4" LONGITUDE 123* 3'45" T21N-R3W-28
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	9.03 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	230. FT		
LAKE AREA	190. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	890. ACRE-FT		
MEAN DEPTH	5. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	10. FT		
SHORELINE LENGTH	4.6 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.4	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.46	AGRICULTURAL	0 %
BOTTOM SLOPE	0.31 %	FOREST OR UNPRODUCTIVE	97 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	3 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

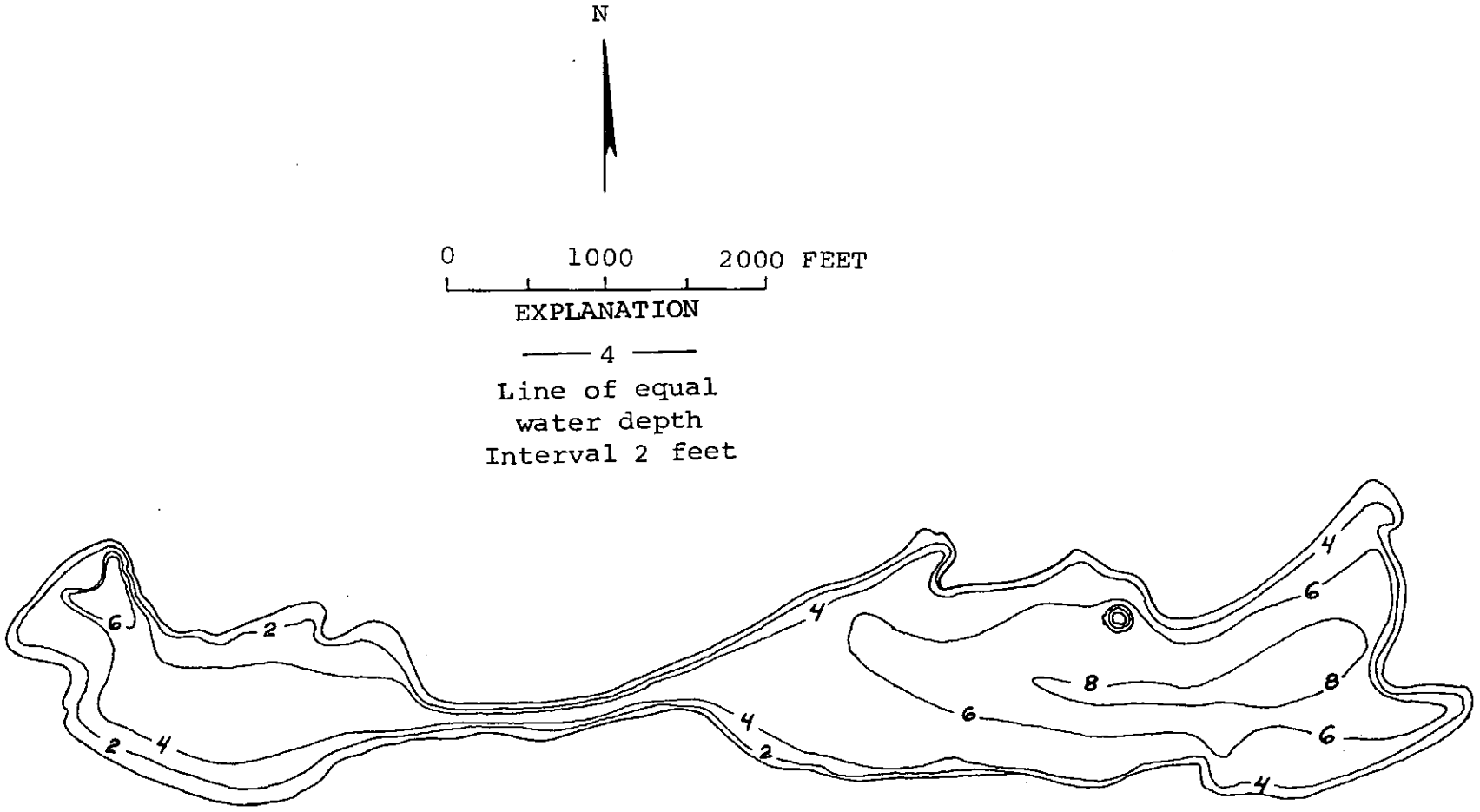
SAMPLE SITE	1	
DATE	8/16/74	
TIME	1205	1210
DEPTH (FT)	3.	5.
TOTAL NITRATE (N)	0.02	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.06	0.06
TOTAL ORGANIC NITROGEN (N)	0.71	0.69
TOTAL PHOSPHORUS (P)	0.023	0.020
TOTAL ORTHOPHOSPHATE (P)	0.004	0.004
SPECIFIC CONDUCTANCE (MICROMHOS)	59	59
WATER TEMPERATURE (DEG C)	19.1	19.1
COLOR (PLATINUM-COBALT UNITS)	10	10
SECCHI-DISC VISIBILITY (FT)	> 7	
DISSOLVED OXYGEN	10.6	10.6

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

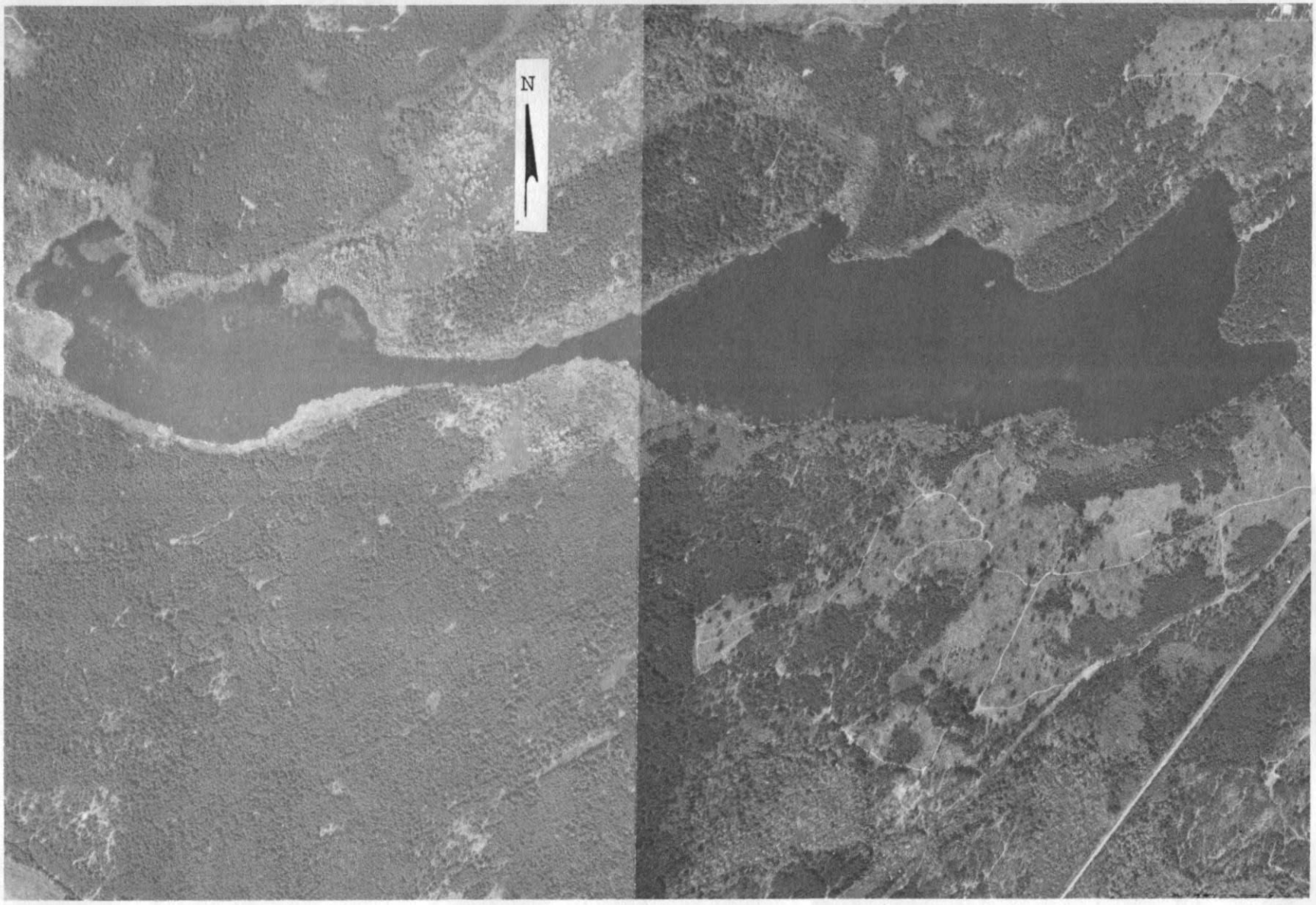
DATE	8/16/74
TIME	1205
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	5
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

A LARGE SHALLOW LAKE FED BY THREE UNNAMED TRIBUTARIES, ONE OF WHICH DRAINS A LARGE MARSH ON THE WEST SIDE OF THE LAKE. THE OUTFLOW IS VIA CRANBERRY CREEK WHICH FLOWS TO LIMERICK LAKE. AT ONE TIME THE LAKE WAS USED AS A SALMON REARING POND BY THE DEPT. OF FISHERIES. THE LAKE HAD A HEAVY COVER OF BOTH EMERSED AND SUBMERSED PLANTS. MOST OF THE EMERSED PLANTS ARE IN THE WEST BAY. THE LITTORAL BOTTOM IS SILT AND MUCK. THERE WERE LOGS AND WOOD DEBRIS ALONG THE SHORE.



Cranberry Lake, Mason County.
From U.S. Geological Survey, February 4, 1974.



Cranberry Lake, Mason County. May 13, 1972. Approx. scale 1:12,000.

CUSHMAN LAKE, MASON COUNTY

LATITUDE 47°25' 9" LONGITUDE 123°13'25" T22N-R4W-5
SKOKOMISH RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	93.7 SQ MI	RESIDENTIAL DEVELOPMENT	11 %
ALTITUDE	735. FT		
LAKE AREA	4000. ACRES	NUMBER OF NEARSHORE HOMES	62
LAKE VOLUME	450000. ACRE-FT		
MEAN DEPTH	110. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	270. FT		
SHORELINE LENGTH	23. MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.6	RESIDENTIAL SUBURBAN	<1 %
DEVELOPMENT OF VOLUME	0.42	AGRICULTURAL	0 %
BOTTOM SLOPE	1.8 %	FOREST OR UNPRODUCTIVE	93 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	7 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1		2		3	
DATE	8/21/74		8/21/74		8/21/74	
TIME	1125	1130	1220	1225	1315	1320
DEPTH (FT)	3.	164.	3.	115.	3.	98.
TOTAL NITRATE (N)	0.02	0.07	0.04	0.02	0.02	0.02
TOTAL NITRITE (N)	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL AMMONIA (N)	0.02	0.02	0.02	0.02	0.02	0.05
TOTAL ORGANIC NITROGEN (N)	0.23	0.06	0.07	0.03	0.03	0.06
TOTAL PHOSPHORUS (P)	0.004	0.002	0.004	0.001	0.002	0.001
TOTAL ORTHOPHOSPHATE (P)	0.002	0.002	0.002	0.001	0.001	0.001
SPECIFIC CONDUCTANCE (MICROMHOS)	55	60	56	60	56	60
WATER TEMPERATURE (DEG C)	18.6	5.9	19.0	7.1	19.2	8.3
COLOR (PLATINUM-COBALT UNITS)	0	0	0	0	0	0
SECCHI-DISC VISIBILITY (FT)	25		25		26	
DISSOLVED OXYGEN	9.1	9.8	9.0	9.6	8.9	9.7

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/21/74
TIME	1030
NUMBER OF FECAL COLIFORM SAMPLES	7
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	6
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

A NATURAL LAKE INCREASED IN SIZE BY A DAM ON THE NORTH FORK SKOKOMISH RIVER. THE LAKE IS USED FOR HYDROPOWER BY THE CITY OF TACOMA. THE UPPER PART OF THE DRAINAGE BASIN IS NATIONAL FOREST, BUT DEVELOPMENT IN THE FORM OF RECREATIONAL AND RESIDENTIAL USE IS OCCURRING ON THE NORTHEAST PORTION OF THE LAKE. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN AT THREE SAMPLING STATIONS. FLOATING AND SUBMERGED LOGS WERE OBSERVED LOCALLY AROUND THE LAKESHORE.

Cushman Lake, Mason County. September 14, 1971. Approx. scale 1:63,000.

CUSHMAN, LOWER LAKE MASON COUNTY

LATITUDE 47*23'51" LONGITUDE 123*11'59" T22N-R4W-16
SKOKOMISH RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	99.2 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	475. FT		
LAKE AREA	150. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	8000. ACRE-FT		
MEAN DEPTH	53. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	170. FT		
SHORELINE LENGTH	4.5 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.6	RESIDENTIAL SUBURBAN	<1 %
DEVELOPMENT OF VOLUME	0.31	AGRICULTURAL	0 %
BOTTOM SLOPE	5.9 %	FOREST OR UNPRODUCTIVE	93 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	7 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1	
DATE	8/26/74	
TIME	1500	1505
DEPTH (FT)	3.	128.
TOTAL NITRATE (N)	0.02	0.03
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.04	0.04
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.004	0.004
TOTAL ORTHOPHOSPHATE (P)	0.002	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	60	58
WATER TEMPERATURE (DEG C)	11.5	7.0
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	28	
DISSOLVED OXYGEN	10.2	8.6

LAKE SHORELINE COVERED BY EMERSED PLANTS LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS NONE OR <1 %

DATE	8/26/74
TIME	1500
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	2
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

AN ARTIFICIAL LAKE CREATED BY A DAM ON THE NORTH FORK SKOKOMISH RIVER. THE LAKE IS USED FOR HYDROPOWER BY THE CITY OF TACOMA. RESIDENTIAL DEVELOPMENT IS OCCURRING ON THE EAST AND SOUTH SHORES OF THE LAKE. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN.

Cushman, Lower Lake, Mason County. August 25, 1972. Approx. scale 1:12,000.

DEVEREAUX LAKE MASON COUNTY

LATITUDE 47°24'47" LONGITUDE 122°50'47" T22N-R1W-7
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.75 SQ MI	RESIDENTIAL DEVELOPMENT	11 %
ALTITUDE	215. FT		
LAKE AREA	94. ACRES	NUMBER OF NEARSHORE HOMES	20
LAKE VOLUME	1800. ACRE-FT		
MEAN DEPTH	19. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	55. FT		
SHORELINE LENGTH	2.5 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.8	RESIDENTIAL SUBURBAN	1 %
DEVELOPMENT OF VOLUME	0.35	AGRICULTURAL	0 %
BOTTOM SLOPE	2.4 %	FOREST OR UNPRODUCTIVE	91 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	8 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

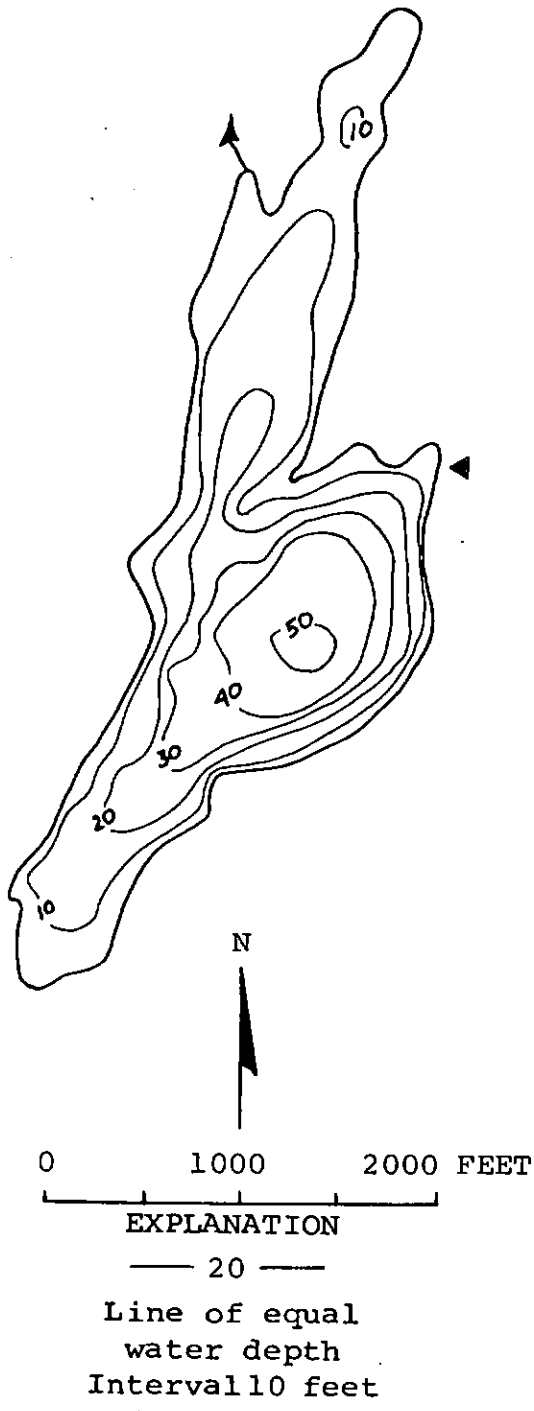
SAMPLE SITE	1	
DATE	8/27/74	
TIME	1400	1405
DEPTH (FT)	3.	36.
TOTAL NITRATE (N)	0.01	0.00
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.06	0.05
TOTAL ORGANIC NITROGEN (N)	0.23	0.17
TOTAL PHOSPHORUS (P)	0.004	0.013
TOTAL ORTHOPHOSPHATE (P)	0.002	0.004
SPECIFIC CONDUCTANCE (MICROMHOS)	20	20
WATER TEMPERATURE (DEG C)	21.8	10.0
COLOR (PLATINUM-COBALT UNITS)	10	10
SECCHI-DISC VISIBILITY (FT)	21	
DISSOLVED OXYGEN	8.8	4.0

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/27/74
TIME	1400
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	4
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

THE LAKESHORE IS PREDOMINATELY OCCUPIED BY A GIRL SCOUT CAMP. A SMALL PORTION OF THE NORTHEAST END OF THE LAKE IS RESIDENTIALLY DEVELOPED. THE SHORELINE WAS COVERED WITH A THIN MARGIN OF EMERSED PLANTS (SEDGE AND LILIES). THE DO WAS NEAR SATURATION EXCEPT FOR SOME DEPLETION NEAR THE LAKE BOTTOM.



Devereaux Lake, Mason County. From Washington Department of Game, June 9, 1949.

Devereaux Lake, Mason County. May 12, 1972. Approx. scale 1:12,000.

FAWN LAKE MASON COUNTY

LATITUDE 47° 9'39" LONGITUDE 123° 3'43" T19N-R3W-4
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.74 SQ MI	RESIDENTIAL DEVELOPMENT	33 %
ALTITUDE	160. FT		
LAKE AREA	56. ACRES	NUMBER OF NEARSHORE HOMES	23
LAKE VOLUME	460. ACRE-FT		
MEAN DEPTH	8. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	22. FT		
SHORELINE LENGTH	2.3 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.2	RESIDENTIAL SUBURBAN	10 %
DEVELOPMENT OF VOLUME	0.37	AGRICULTURAL	16 %
BOTTOM SLOPE	1.2 %	FOREST OR UNPRODUCTIVE	62 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	12 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

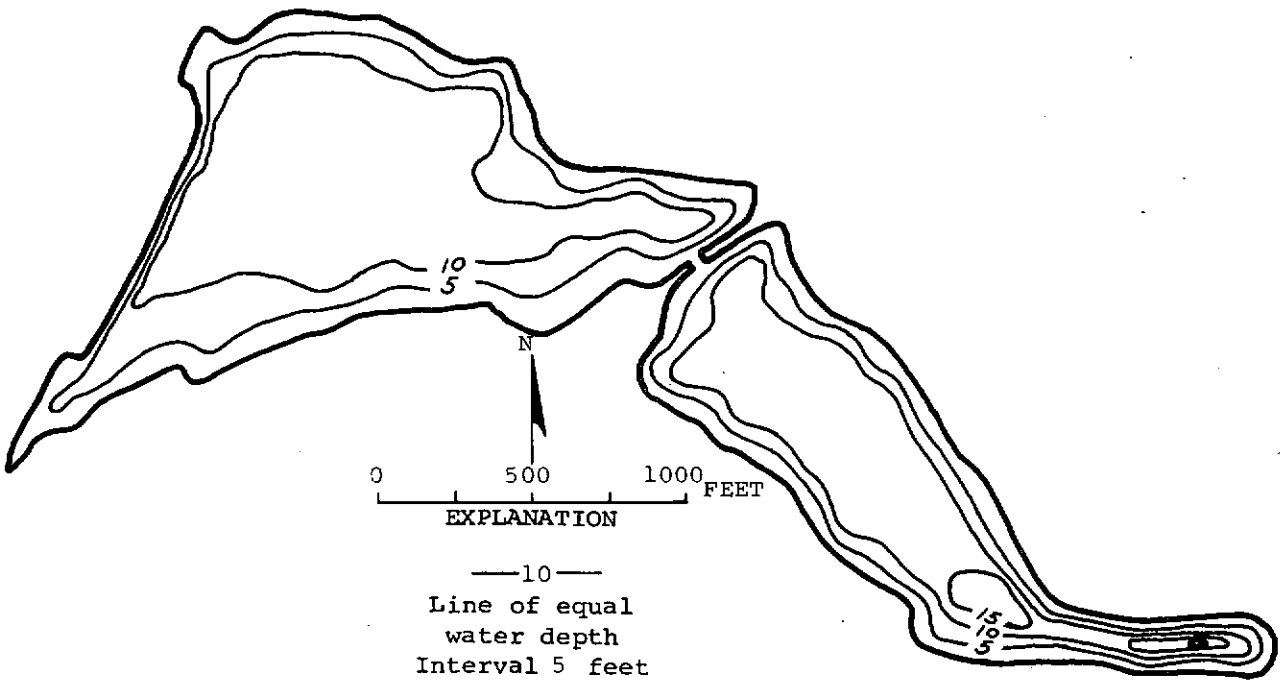
SAMPLE SITE	1		2	
DATE	8/20/74		8/20/74	
TIME	1030	1035	1115	1120
DEPTH (FT)	3.	8.	3.	8.
TOTAL NITRATE (N)	0.01	0.00	0.00	0.01
TOTAL NITRITE (N)	0.01	0.00	0.00	0.00
TOTAL AMMONIA (N)	0.09	0.11	0.24	0.25
TOTAL ORGANIC NITROGEN (N)	0.75	0.63	0.59	0.64
TOTAL PHOSPHORUS (P)	0.023	0.023	0.034	0.034
TOTAL ORTHOPHOSPHATE (P)	0.006	0.005	0.008	0.010
SPECIFIC CONDUCTANCE (MICROMHOS)	57	57	59	54
WATER TEMPERATURE (DEG C)	19.7	19.6	19.2	19.2
COLOR (PLATINUM-COBALT UNITS)	30	30	35	10
SECCHI-DISC VISIBILITY (FT)	9		9	
DISSOLVED OXYGEN	7.5	7.5	5.9	5.7

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/20/74
TIME	1040
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	8
FECAL COLIFORM, MEAN (COL./100ML)	3

REMARKS

PRIOR TO 1965 THE LAKE WAS A SWAMPY AREA WITH SOME OPEN WATER. DREDGING OF THE AREA AND DAMMING OF THE OUTLET CREATED AN ARTIFICIAL LAKE FOR COMMUNITY RESIDENTIAL AND RECREATIONAL USE. THE LAKE IS PARTIALLY DIVIDED BY A DIKE WITH A NARROW CHANNEL AND WAS SAMPLED AT TWO SITES. EMERSED PLANTS COVERED MOST OF THE SHORELINE AND SUBMERSED PLANTS (WATER MILFOIL) COVERED THE LAKE BOTTOM. THE LITTORAL BOTTOM WAS SILT WITH SOME GRAVEL.



Fawn Lake, Mason County. From U.S. Geological Survey, December 27, 1973.

Fawn Lake, Mason County. May 13, 1972. Approx. scale 1:12,000.

FORBES LAKE MASON COUNTY

LATITUDE 47*11'22" LONGITUDE 122*58'13" T20N-R2W-30
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.80 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	95. FT		
LAKE AREA	39. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	730. ACRE-FT		
MEAN DEPTH	19. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	30. FT		
SHORELINE LENGTH	1.0 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.62	AGRICULTURAL	14 %
BOTTOM SLOPE	2.0 %	FOREST OR UNPRODUCTIVE	78 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	8 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

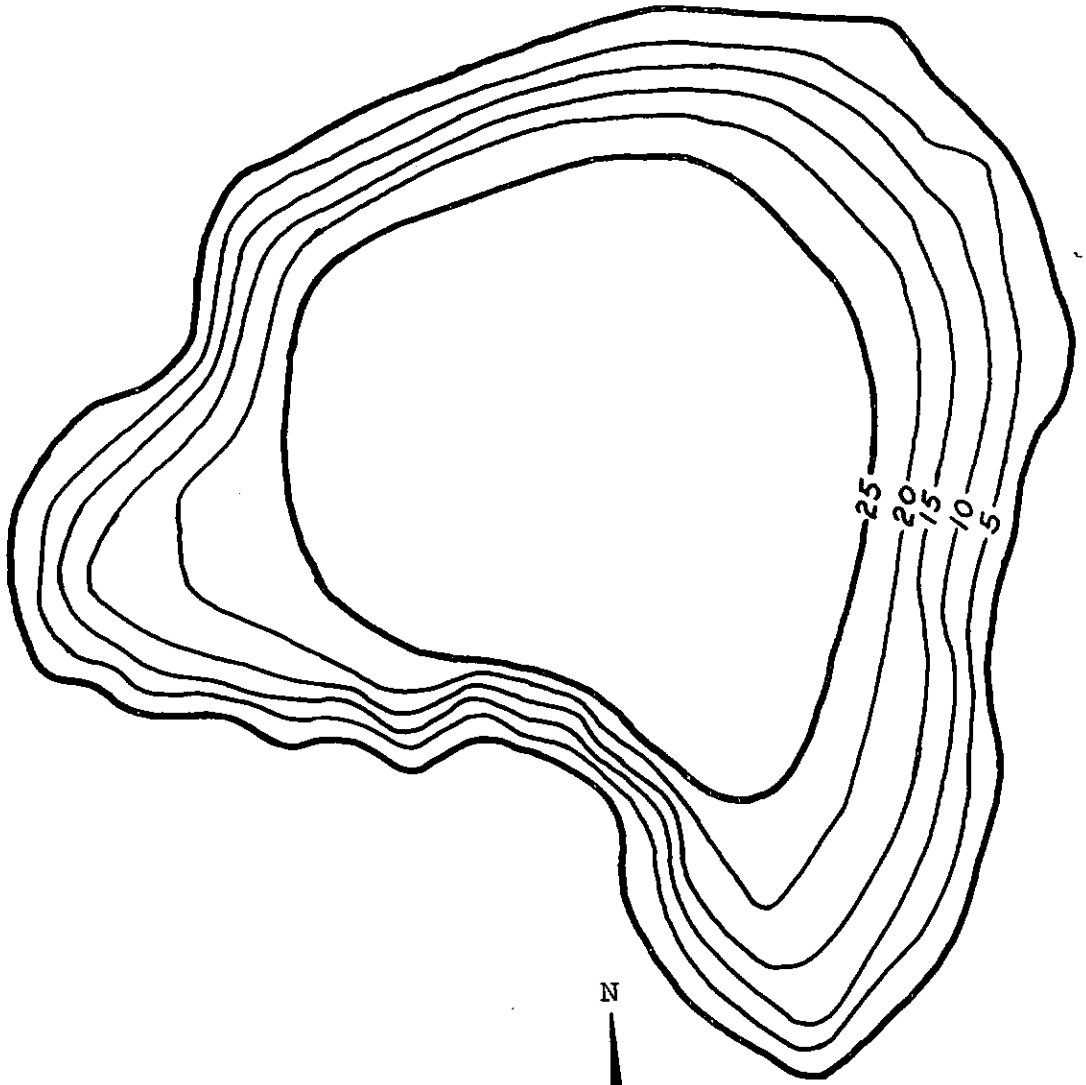
SAMPLE SITE	1	
DATE	8/20/74	
TIME	1205	1210
DEPTH (FT)	3.	21.
TOTAL NITRATE (N)	0.00	0.01
TOTAL NITRITE (N)	0.01	0.00
TOTAL AMMONIA (N)	0.07	0.27
TOTAL ORGANIC NITROGEN (N)	0.92	0.53
TOTAL PHOSPHORUS (P)	0.011	0.079
TOTAL ORTHOPHOSPHATE (P)	0.004	0.045
SPECIFIC CONDUCTANCE (MICROMHOS)	42	50
WATER TEMPERATURE (DEG C)	19.1	8.3
COLOR (PLATINUM-COBALT UNITS)	30	75
SECCHI-DISC VISIBILITY (FT)	9	
DISSOLVED OXYGEN	8.6	0.4

LAKE SHORELINE COVERED BY EMERSED PLANTS	51- 75 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/20/74
TIME	1220
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	2
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

THE SHORELAND ON THE NORTH SIDE OF THE LAKE IS USED FOR AGRICULATURE AND FOREST SURROUNDS THE REST OF THE LAKE. THIN PATCHES OF AQUATIC MACROPHYTES WERE OBSERVED. THE LITTORAL BOTTOM IS MOSTLY SILT AND MUCK. HYDROGEN SULFIDE WAS DETECTED IN THE HYPOLIMNION.



0 500 1000 FEET

EXPLANATION

—10—

Line of equal
water depth
Interval 5 feet

Forbes Lake, Mason County.
From U.S. Geological Survey, February 4, 1974.

Forbes Lake, Mason County. June 30, 1974. Approx. scale 1:4800.

HANKS LAKE MASON COUNTY

LATITUDE 47°14'48" LONGITUDE 123°15' 5" T20N-R5W-1
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.93 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	400. FT		
LAKE AREA	26. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME (EST.)	75. ACRE-FT		
MEAN DEPTH (EST.)	3. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	5. FT		
SHORELINE LENGTH	1.6 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.2	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.55	AGRICULTURAL	0 %
BOTTOM SLOPE	0.43 %	FOREST OR UNPRODUCTIVE	97 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	3 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

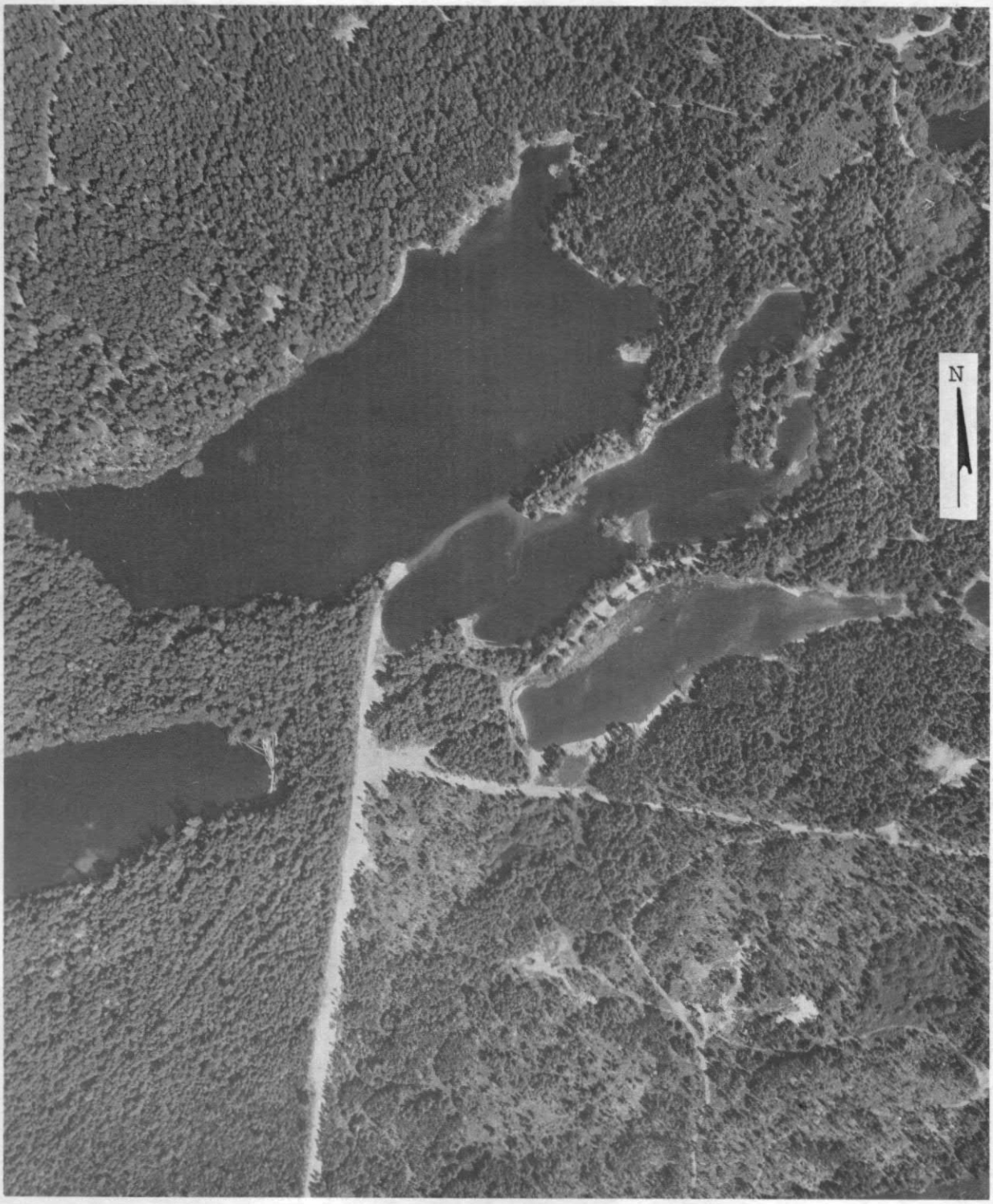
SAMPLE SITE	1	
DATE	8/15/74	
TIME	1100	1105
DEPTH (FT)	2.	3.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.09
TOTAL ORGANIC NITROGEN (N)	0.59	0.42
TOTAL PHOSPHORUS (P)	0.012	0.014
TOTAL ORTHOPHOSPHATE (P)	0.004	0.004
SPECIFIC CONDUCTANCE (MICROMHOS)	36	36
WATER TEMPERATURE (DEG C)	18.4	18.2
COLOR (PLATINUM-COBALT UNITS)	5	5
SECCHI-DISC VISIBILITY (FT)	> 5	
DISSOLVED OXYGEN	9.3	9.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	51- 75 %
LAKE SURFACE COVERED BY EMERSED PLANTS	26- 50 %

DATE	8/15/74
TIME	1115
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	1
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

THE LARGEST OF A GROUP OF SEVERAL SMALL LAKES. TREES AND SHRUBS OVERHANG THE WATER. THE LAKE HAD A HEAVY COVER OF BOTH EMERSED AND SUBMERSED PLANTS. THERE IS NO BATHYMETRIC MAP OF THE LAKE AND THE LAKE VOLUME HAS BEEN ESTIMATED.



Hanks Lake, Mason County. June 30, 1974. Approx. scale 1:4800.

HAVEN LAKE MASON COUNTY

LATITUDE 47°27'28" LONGITUDE 122°58'33" T23N-R2W-30
TAHUYA RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.13 SQ MI	RESIDENTIAL DEVELOPMENT	72 %
ALTITUDE	366. FT		
LAKE AREA	69. ACRES	NUMBER OF NEARSHORE HOMES	82
LAKE VOLUME	1300. ACRE-FT		
MEAN DEPTH	18. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	31. FT		
SHORELINE LENGTH	2.2 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.8	RESIDENTIAL SUBURBAN	12 %
DEVELOPMENT OF VOLUME	0.59	AGRICULTURAL	0 %
BOTTOM SLOPE	1.6 %	FOREST OR UNPRODUCTIVE	78 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	10 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

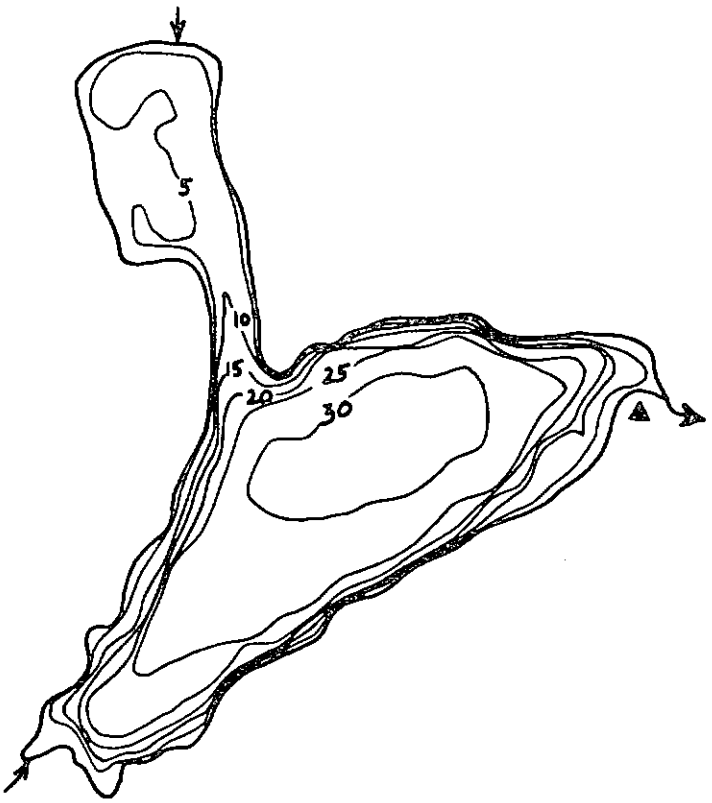
SAMPLE SITE	1	
DATE	8/26/74	
TIME	1100	1105
DEPTH (FT)	3.	23.
TOTAL NITRATE (N)	0.03	0.02
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.11	0.11
TOTAL ORGANIC NITROGEN (N)	0.04	0.00
TOTAL PHOSPHORUS (P)	0.005	0.012
TOTAL ORTHOPHOSPHATE (P)	0.003	0.004
SPECIFIC CONDUCTANCE (MICROMHOS)	35	35
WATER TEMPERATURE (DEG C)	21.0	20.2
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	18	
DISSOLVED OXYGEN	9.2	9.0

LAKE SHORELINE COVERED BY EMERSED PLANTS	1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/26/74
TIME	1030
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	3
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

THE LAKE IS FED FROM WOOTEN LAKE. SUBMERSED PLANTS COVERED THE NORTH BAY. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN. THE LITTORAL BOTTOM IS MOSTLY GRAVEL AND SUPPORTED VERY FEW EMERSED AQUATIC PLANTS



N

0 1000 2000 FEET

EXPLANATION

——10——

Line of equal
water depth
Interval 5 feet

Haven Lake, Mason County. From Washington Department of Game, July 20, 1948.

Haven Lake, Mason County. August 24, 1972. Approx. scale 1:12,000.

ISABELLA LAKE MASON COUNTY

LATITUDE 47*10'36" LONGITUDE 123* 6'17" T20N-R3W-31
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	17.5 SQ MI	RESIDENTIAL DEVELOPMENT	28 %
ALTITUDE	150. FT		
LAKE AREA	200. ACRES	NUMBER OF NEARSHORE HOMES	38
LAKE VOLUME	3200. ACRE-FT		
MEAN DEPTH	16. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	23. FT		
SHORELINE LENGTH	2.5 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	1 %
DEVELOPMENT OF VOLUME	0.70	AGRICULTURAL	5 %
BOTTOM SLOPE	0.70 %	FOREST OR UNPRODUCTIVE	92 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	2 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

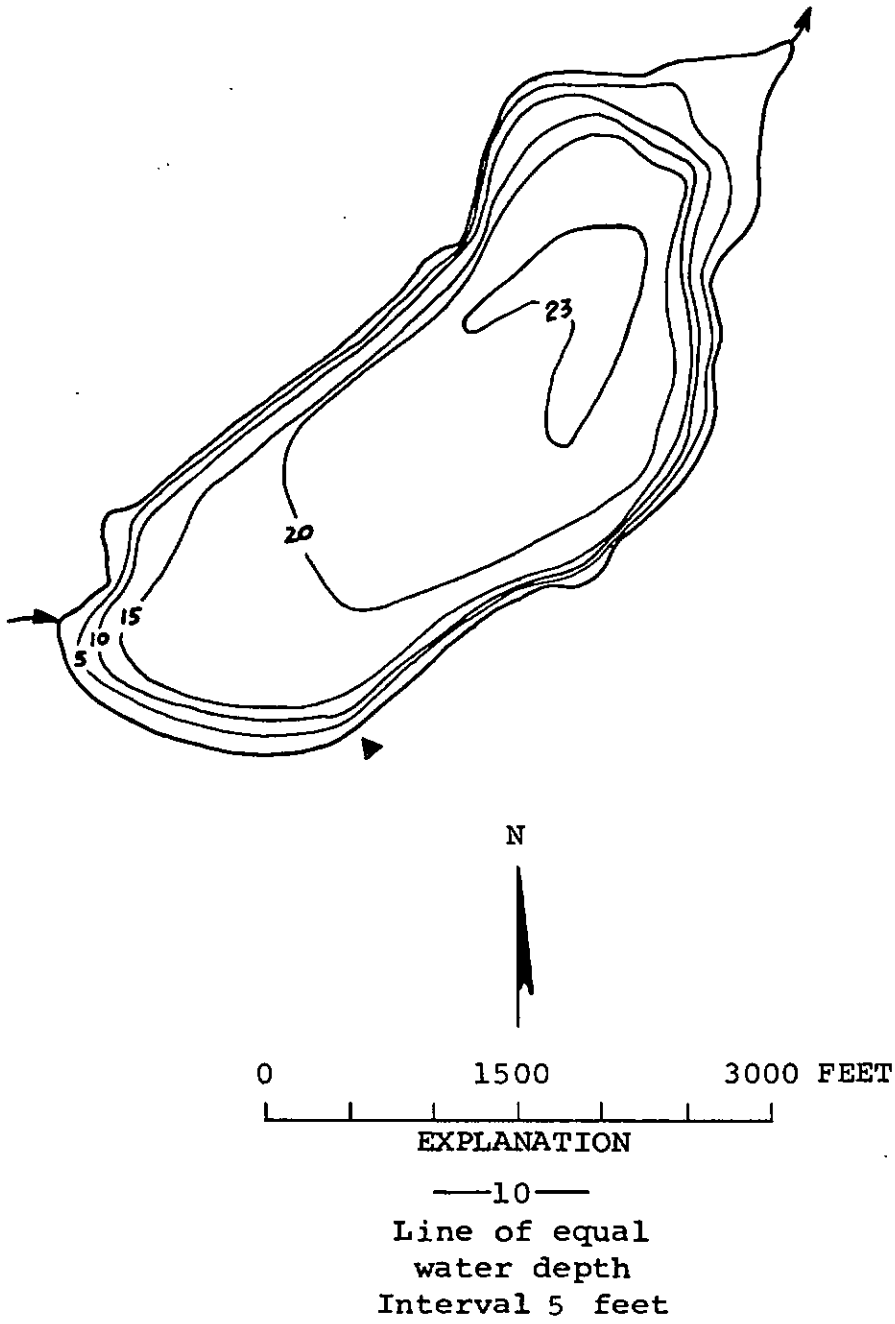
SAMPLE SITE	1	
DATE	6/21/73	
TIME	1410	1415
DEPTH (FT)	3.	17.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.08	0.09
TOTAL ORGANIC NITROGEN (N)	0.07	0.03
TOTAL PHOSPHORUS (P)	0.010	0.024
DISSOLVED ORTHOPHOSPHATE (P)	0.001	--
SPECIFIC CONDUCTANCE (MICROMHOS)	78	78
WATER TEMPERATURE (DEG C)	20.0	15.3
COLOR (PLATINUM-COBALT UNITS)	10	10
SECCHI-DISC VISIBILITY (FT)	10	
DISSOLVED OXYGEN	10.5	8.1

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	6/21/73
TIME	1430
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	2
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

THE LAKE IS FED BY GOSNELL CREEK, A STREAM WHICH MEANDERS THROUGH SEVERAL MILES OF AGRICULTURAL LAND. THE SOUTHWEST AND NORTHEAST ENDS OF THE LAKE NEAR THE INFLOW AND OUTFLOW ARE MARSHY. DENSE BEDS OF EMERSED PLANTS EXTEND 200-300 FEET FROM SHORE NEAR THE MARSHES. SUBMERSED PLANTS (ELODEA AND PONDWEED) COVERED ABOUT 30 PERCENT OF THE LAKE BOTTOM. IN 1973 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON AUGUST 12, 1973.



Isabella Lake, Mason County. From Washington Department of Game, June 25, 1952.

Isabella Lake, Mason County. May 19, 1972. Approx. scale 1:12,000.

ISLAND LAKE MASON COUNTY

LATITUDE 47*14'44" LONGITUDE 123* 6'40" T20N-R3W-6
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.26 SQ MI	RESIDENTIAL DEVELOPMENT	100 %
ALTITUDE	230. FT		
LAKE AREA	110. ACRES	NUMBER OF NEARSHORE HOMES	85
LAKE VOLUME	2200. ACRE-FT		
MEAN DEPTH	21. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	31. FT		
SHORELINE LENGTH	1.7 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	35 %
DEVELOPMENT OF VOLUME	0.67	AGRICULTURAL	0 %
BOTTOM SLOPE	1.3 %	FOREST OR UNPRODUCTIVE	0 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	65 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1	
DATE	8/16/74	
TIME	1115	1120
DEPTH (FT)	3.	18.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.05
TOTAL ORGANIC NITROGEN (N)	0.41	0.40
TOTAL PHOSPHORUS (P)	0.011	0.010
TOTAL ORTHOPHOSPHATE (P)	0.003	0.003
SPECIFIC CONDUCTANCE (MICROMHOS)	40	40
WATER TEMPERATURE (DEG C)	20.8	20.0
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	11	
DISSOLVED OXYGEN	8.9	8.3

LAKE SHORELINE COVERED BY EMERSED PLANTS	11- 25 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/16/74
TIME	1130
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	2
FECAL COLIFORM, MAXIMUM (COL./100ML)	3
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

A DENSE PATTERN OF RESIDENTIAL DEVELOPMENT SURROUNDS THE LAKE. THE LAKE HAS A STEEP-SIDED, GRAVELLY LITTORAL BOTTOM WHICH SUPPORTED A SPARSE GROWTH OF AQUATIC MACROPHYTES. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN.

N

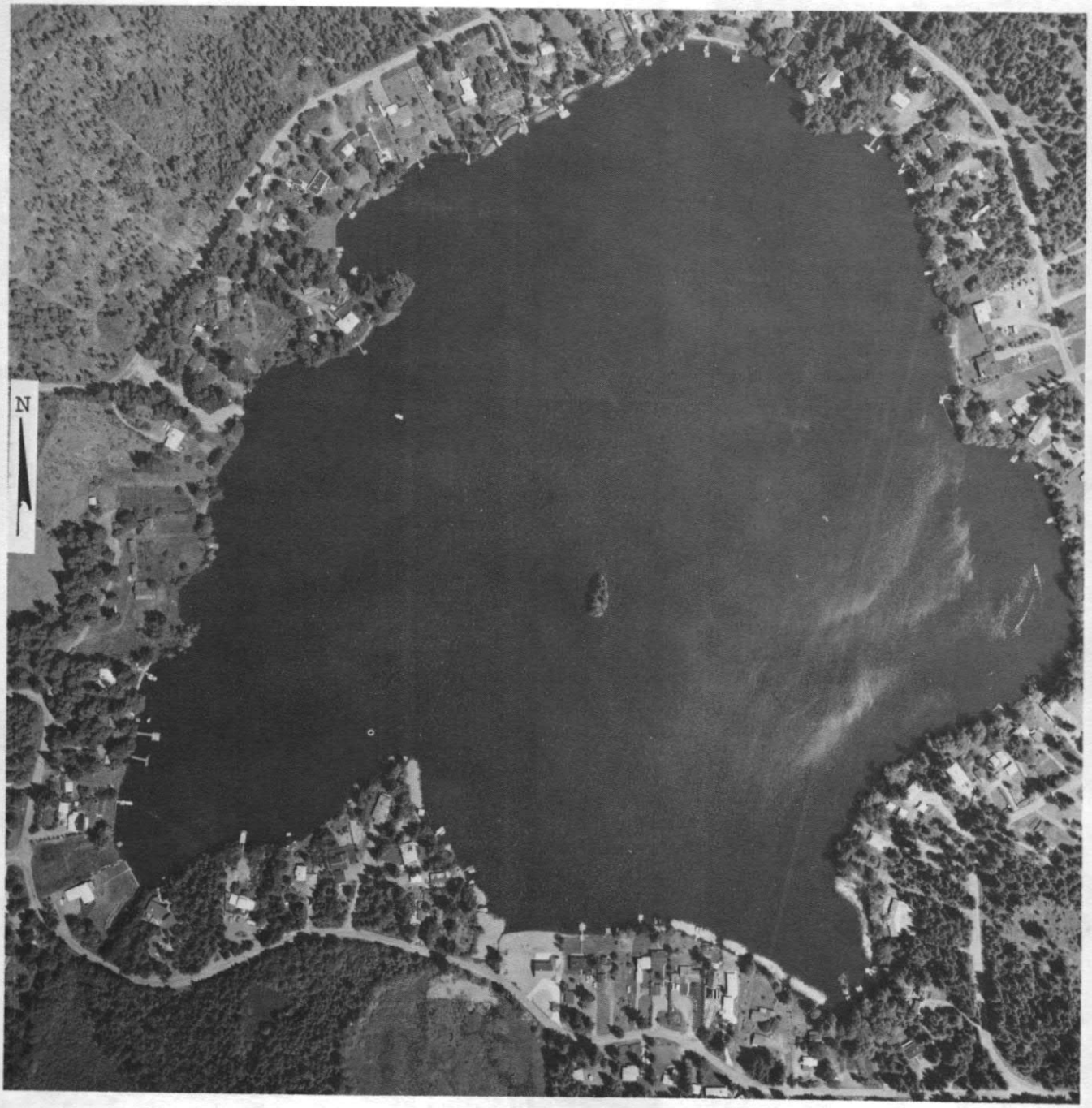
0 1000 2000 FEET

EXPLANATION

——10——

Line of equal
water depth
Interval 5 feet

Island Lake, Mason County. From Washington Department of Game, February 15, 1952.



Island Lake, Mason County. July 13, 1974. Approx. scale 1:4800.

LIMERICK LAKE MASON COUNTY

LATITUDE 47*16'59" LONGITUDE 123* 2'51" T21N-R3W-27
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	13.0 SQ MI	RESIDENTIAL DEVELOPMENT	31 %
ALTITUDE	230. FT		
LAKE AREA	130. ACRES	NUMBER OF NEARSHORE HOMES	24
LAKE VOLUME	1200. ACRE-FT		
MEAN DEPTH	9. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	24. FT		
SHORELINE LENGTH	4.4 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.8	RESIDENTIAL SUBURBAN	1 %
DEVELOPMENT OF VOLUME	0.39	AGRICULTURAL	0 %
BOTTOM SLOPE	0.90 %	FOREST OR UNPRODUCTIVE	95 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	4 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

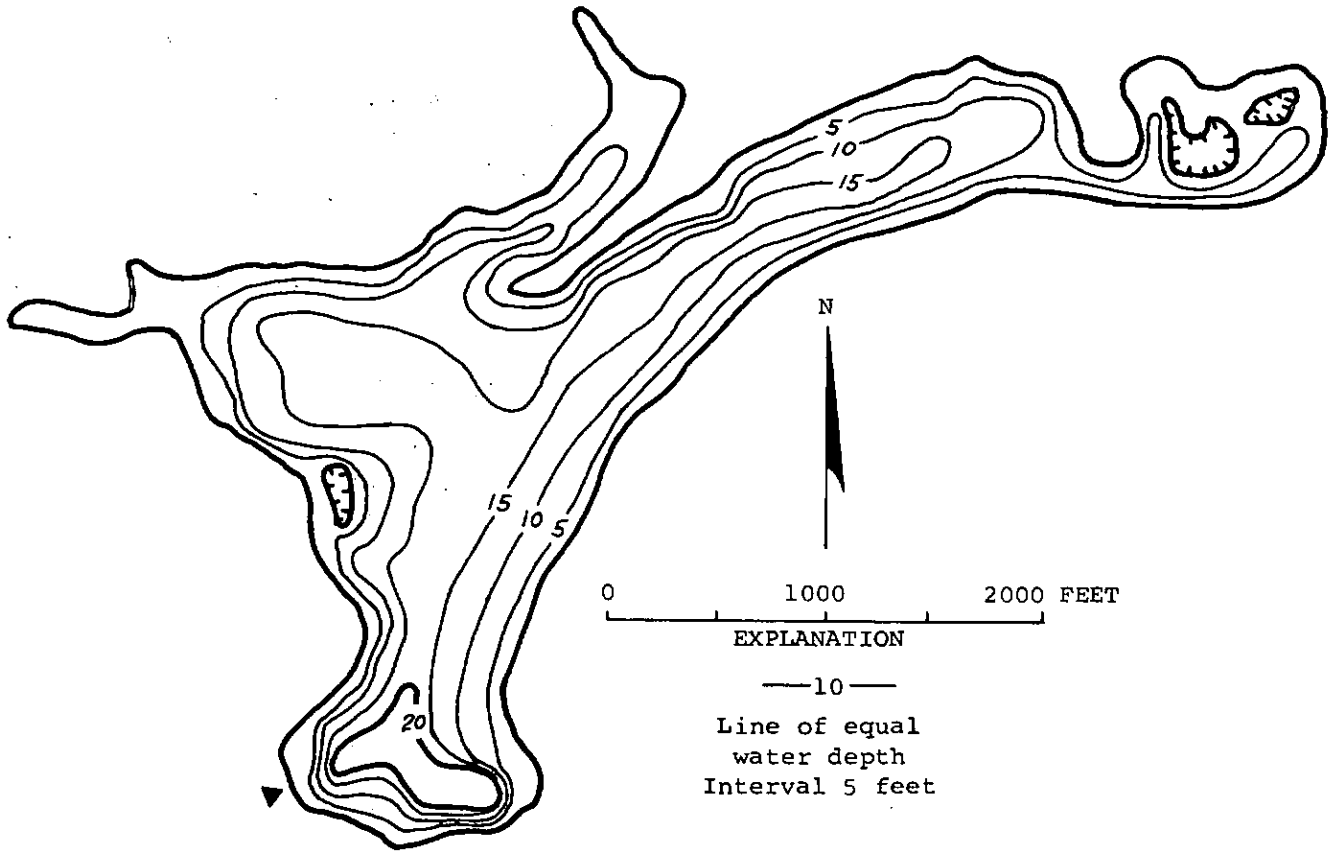
SAMPLE SITE	1	
DATE	8/16/74	
TIME	1300	1305
DEPTH (FT)	3.	11.
TOTAL NITRATE (N)	0.02	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.06
TOTAL ORGANIC NITROGEN (N)	0.45	0.49
TOTAL PHOSPHORUS (P)	0.008	0.011
TOTAL ORTHOPHOSPHATE (P)	0.004	0.003
SPECIFIC CONDUCTANCE (MICROMHOS)	55	55
WATER TEMPERATURE (DEG C)	20.3	19.1
COLOR (PLATINUM-COBALT UNITS)	20	15
SECCHI-DISC VISIBILITY (FT)	11	
DISSOLVED OXYGEN	8.2	7.3

LAKE SHORELINE COVERED BY EMERSED PLANTS	11- 25 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/16/74
TIME	1315
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	5
FECAL COLIFORM, MAXIMUM (COL./100ML)	9
FECAL COLIFORM, MEAN (COL./100ML)	8

REMARKS

AN ARTIFICIAL LAKE FED FROM CRANBERRY LAKE. THE SHORE AND UPLAND ARE DEVELOPED FOR RESIDENTIAL AND RECREATIONAL PURPOSES. EMERSED PLANTS WERE THINLY SCATTERED ALONG THE GRAVELLY BEACHES. SUBMERSED PLANTS OCCURRED IN BOTH THINLY SCATTERED AND DENSE PATCHES.



Limerick Lake, Mason County. From
U.S. Geological Survey, December 4, 1973.

Limerick Lake, Mason County. May 12, 1972. Approx. scale 1:12,000.

LOST LAKE MASON COUNTY

LATITUDE 47° 9'16" LONGITUDE 123°14'51" T19N-R5W-1
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.08 SQ MI	RESIDENTIAL DEVELOPMENT	95 %
ALTITUDE	480. FT		
LAKE AREA	120. ACRES	NUMBER OF NEARSHORE HOMES	114
LAKE VOLUME	3400. ACRE-FT		
MEAN DEPTH	28. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	65. FT		
SHORELINE LENGTH	3.2 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.1	RESIDENTIAL SUBURBAN	12 %
DEVELOPMENT OF VOLUME	0.42	AGRICULTURAL	0 %
BOTTOM SLOPE	2.5 %	FOREST OR UNPRODUCTIVE	70 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	18 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

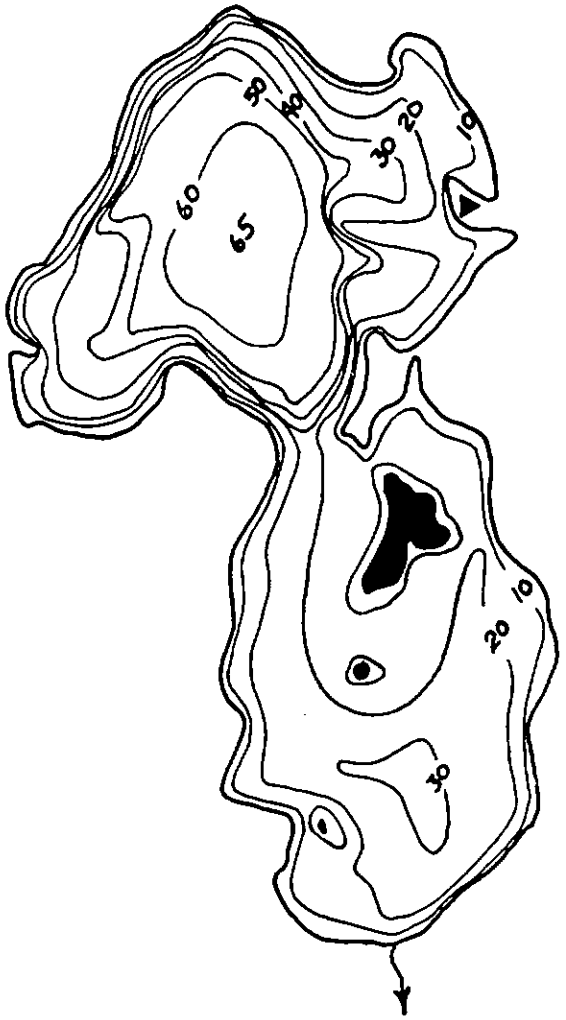
SAMPLE SITE	1	
DATE	6/21/73	
TIME	1135	1145
DEPTH (FT)	3.	52.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.01
TOTAL ORGANIC NITROGEN (N)	0.06	0.12
TOTAL PHOSPHORUS (P)	0.016	0.004
DISSOLVED ORTHOPHOSPHATE (P)	0.001	0.000
SPECIFIC CONDUCTANCE (MICROMHOS)	21	22
WATER TEMPERATURE (DEG C)	19.1	6.0
COLOR (PLATINUM-COBALT UNITS)	5	10
SECCHI-DISC VISIBILITY (FT)	21	
DISSOLVED OXYGEN	9.1	4.4

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

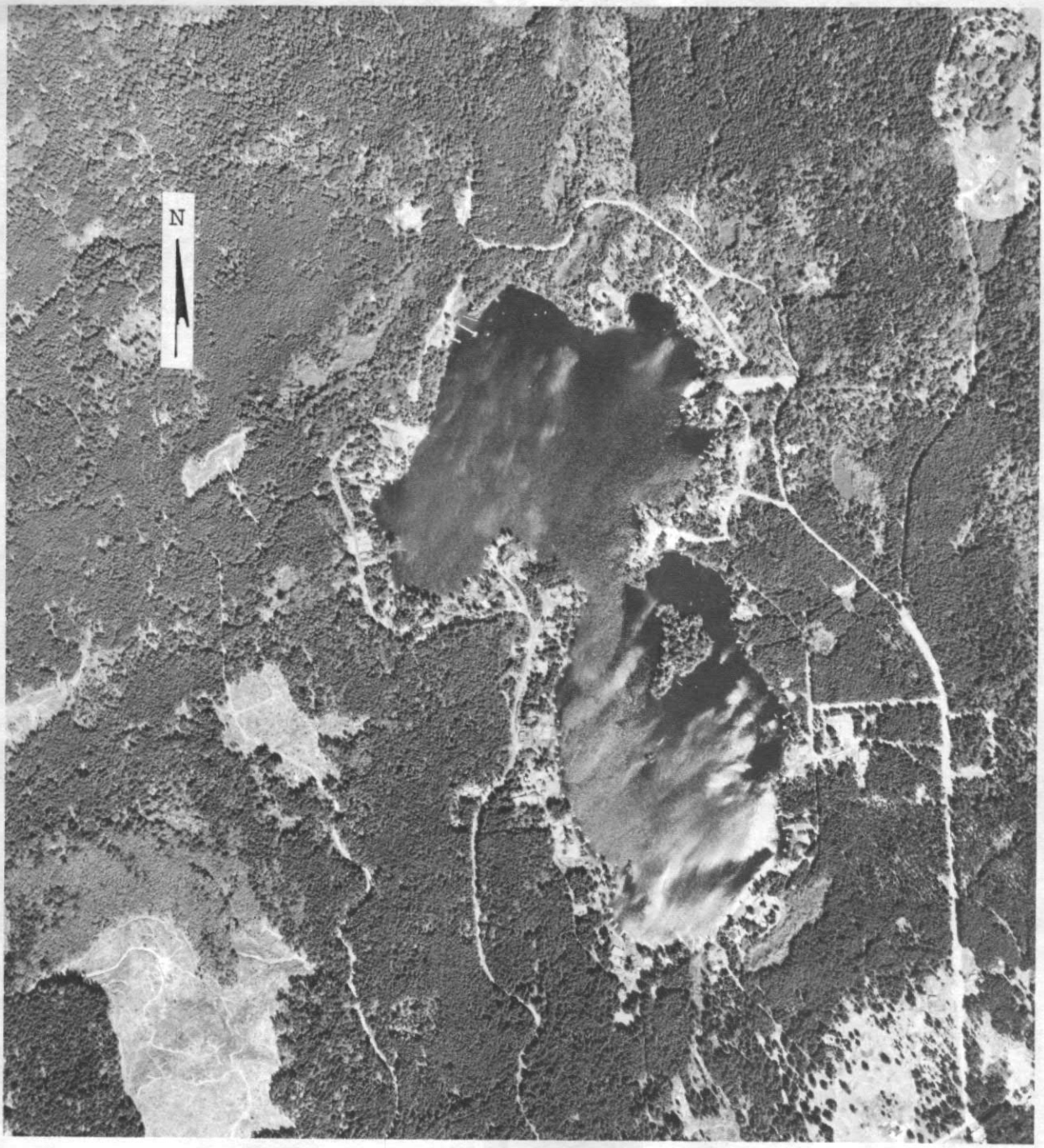
DATE	6/21/73
TIME	1200
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	2
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

THE LAKE RECEIVES HEAVY RECREATIONAL USE. NO AQUATIC MACROPHYTES WERE OBSERVED. THE LITTORAL BOTTOM IS GRAVEL, COBBLE AND SAND. DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN EXCEPT FOR FOUR FEET OF WATER NEAR THE LAKE BOTTOM. IN 1973 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON AUGUST 12, 1973.



Lost Lake, Mason County. From Washington Department of Game, February 12, 1952.



Lost Lake, Mason County. May 19, 1972. Approx. scale 1:12,000.

LYSTAIR LAKE MASON COUNTY

LATITUDE 47* 9' 7" LONGITUDE 123*19'50" T19N-R5W-8
CHEHALIS RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.24 SQ MI	RESIDENTIAL DEVELOPMENT	29 %
ALTITUDE	350. FT		
LAKE AREA	46. ACRES	NUMBER OF NEARSHORE HOMES	19
LAKE VOLUME	230. ACRE-FT		
MEAN DEPTH	5. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	9. FT		
SHORELINE LENGTH	2.1 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.2	RESIDENTIAL SUBURBAN	7 %
DEVELOPMENT OF VOLUME	0.56	AGRICULTURAL	7 %
BOTTOM SLOPE	0.56 %	FOREST OR UNPRODUCTIVE	56 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	30 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

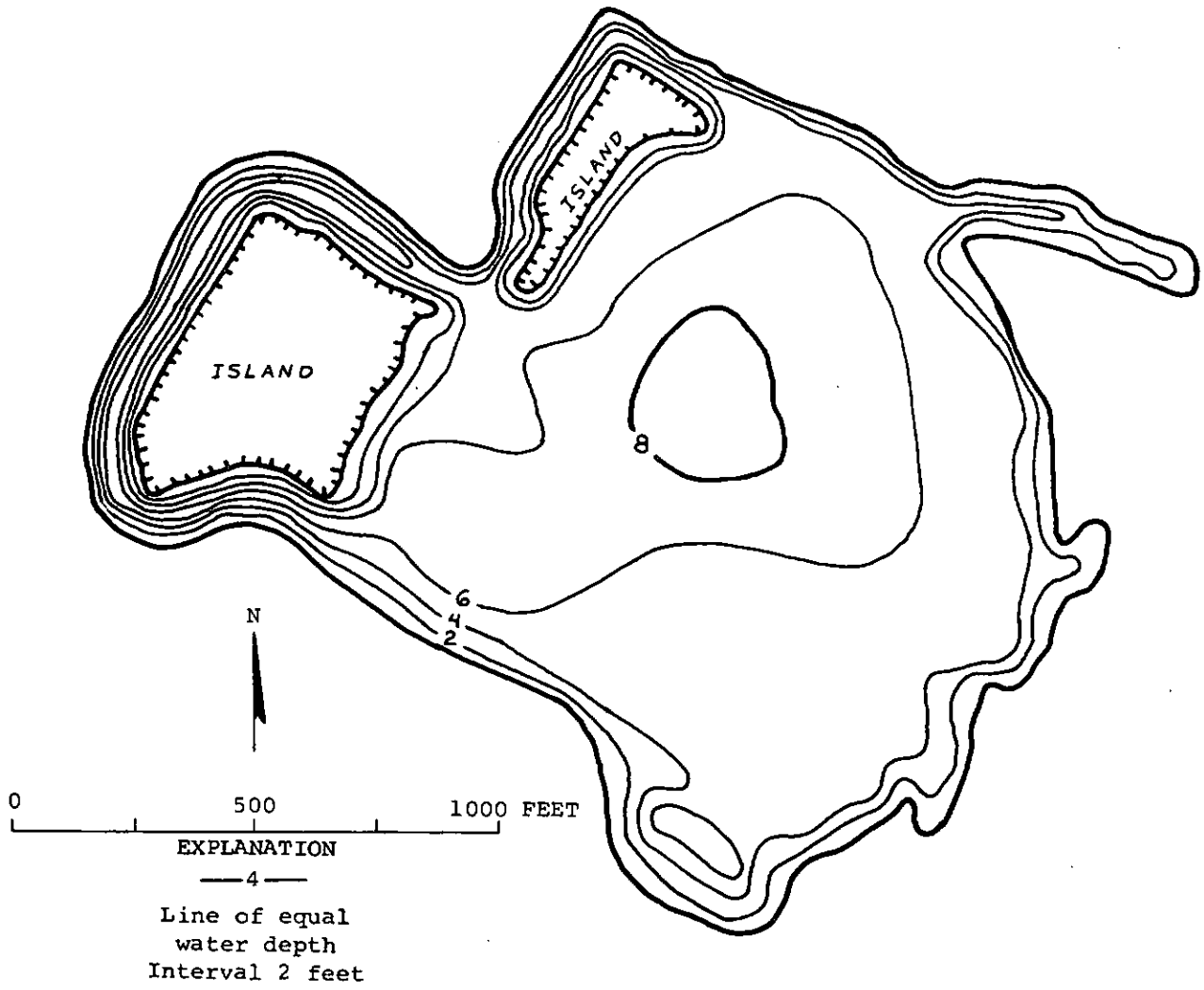
SAMPLE SITE	1	
DATE	8/15/74	
TIME	1245	1250
DEPTH (FT)	3.	5.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.10	0.10
TOTAL ORGANIC NITROGEN (N)	0.41	0.40
TOTAL PHOSPHORUS (P)	0.012	0.013
TOTAL ORTHOPHOSPHATE (P)	0.004	0.004
SPECIFIC CONDUCTANCE (MICROMHOS)	33	33
WATER TEMPERATURE (DEG C)	19.1	18.8
COLOR (PLATINUM-COBALT UNITS)	15	15
SECCHI-DISC VISIBILITY (FT)	6	
DISSOLVED OXYGEN	8.8	8.8

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

DATE	8/15/74
TIME	1300
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	3
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

A VERY SHALLOW LAKE WITH TWO BOG MAT ISLANDS. EMERSED PLANTS COVERED THE SHORELINE AND A LARGE PERCENTAGE OF THE LAKE SURFACE. PARK FACILITIES AND A GOLF COURSE ARE LOCATED ON THE SOUTHERN END OF THE LAKE.



Lystair Lake, Mason County. From
U.S. Geological Survey, December 28, 1973.

Lystair Lake, Mason County. June 30, 1974. Approx. scale 1:4800.

MAGGIE LAKE MASON COUNTY

LATITUDE 47*24' 0" LONGITUDE 123* 1'40" T22N-R3W-14
TAHUYA RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.24 SQ MI	RESIDENTIAL DEVELOPMENT	52 %
ALTITUDE	400. FT		
LAKE AREA	25. ACRES	NUMBER OF NEARSHORE HOMES	31
LAKE VOLUME	820. ACRE-FT		
MEAN DEPTH	33. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	74. FT		
SHORELINE LENGTH	1.1 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.5	RESIDENTIAL SUBURBAN	27 %
DEVELOPMENT OF VOLUME	0.44	AGRICULTURAL	0 %
BOTTOM SLOPE	6.3 %	FOREST OR UNPRODUCTIVE	46 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	27 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

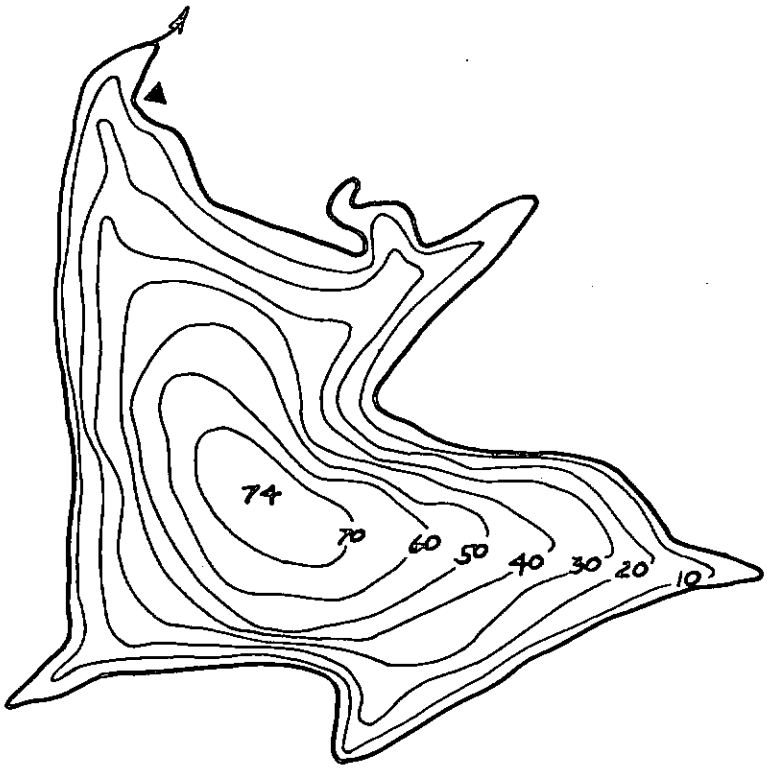
SAMPLE SITE	1	
DATE	8/26/74	
TIME	1400	1405
DEPTH (FT)	3.	59.
TOTAL NITRATE (N)	0.00	0.00
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.04
TOTAL ORGANIC NITROGEN (N)	0.04	--
TOTAL PHOSPHORUS (P)	0.007	0.008
TOTAL ORTHOPHOSPHATE (P)	0.003	0.005
SPECIFIC CONDUCTANCE (MICROMHOS)	17	19
WATER TEMPERATURE (DEG C)	21.0	7.0
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	25	
DISSOLVED OXYGEN	8.9	8.6

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/26/74
TIME	1330
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	5
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

A DEEP LAKE IN RELATION TO THE SURFACE AREA. THE WATER CLARITY IS HIGH AS INDICATED BY A SECCHI-DISC READING OF 25 FEET. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN. VERY FEW AQUATIC MACROPHYTES WERE GROWING ON THE GRAVELLY LITTORAL BOTTOM. HOWEVER, MOSS WAS FOUND GROWING ON THE LAKE BOTTOM AT A DEPTH OF 64 FEET.



N

0 500 1000 FEET

EXPLANATION

—20—

Line of equal
water depth
Interval 10 feet

Maggie Lake, Mason County. From Washington Department of Game, June 11, 1950.

Maggie Lake, Mason County. July 13, 1974. Approx. scale 1:4800.

MASON LAKE MASON COUNTY

LATITUDE 47°21'14" LONGITUDE 122°55'17" T22N-R2W-34
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	20.2 SQ MI	RESIDENTIAL DEVELOPMENT	87 %
ALTITUDE	194. FT		
LAKE AREA	1000. ACRES	NUMBER OF NEARSHORE HOMES	571
LAKE VOLUME	49000. ACRE-FT		
MEAN DEPTH	48. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	90. FT		
SHORELINE LENGTH	11. MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.4	RESIDENTIAL SUBURBAN	3 %
DEVELOPMENT OF VOLUME	0.53	AGRICULTURAL	0 %
BOTTOM SLOPE	1.2 %	FOREST OR UNPRODUCTIVE	89 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	8 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

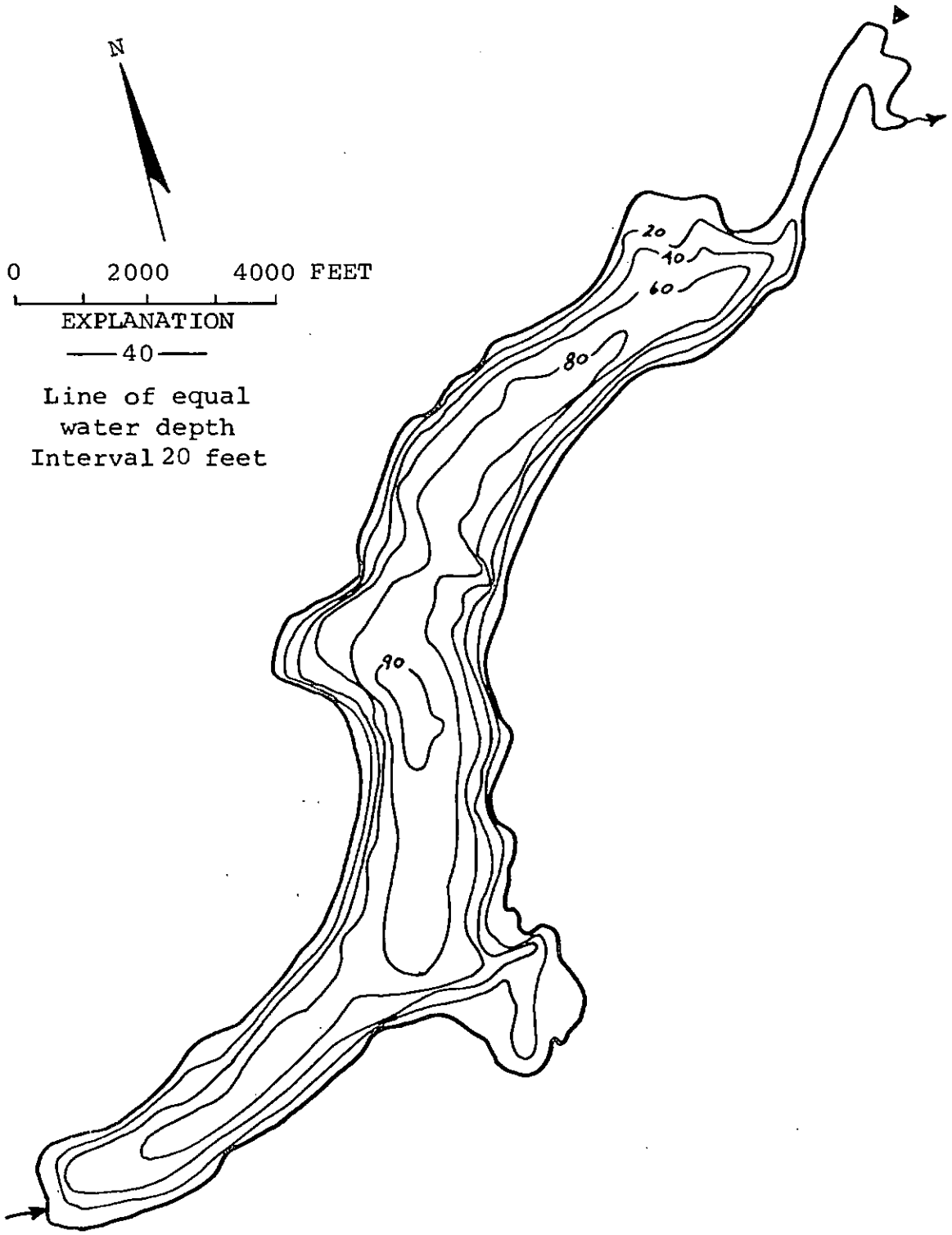
SAMPLE SITE	1	
DATE	6/29/72	
TIME	1010	1020
DEPTH (FT)	3.	75.
DISSOLVED NITRATE (N)	0.00	0.00
DISSOLVED NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.00	0.00
TOTAL ORGANIC NITROGEN (N)	0.19	0.14
TOTAL PHOSPHORUS (P)	0.012	0.014
DISSOLVED ORTHOPHOSPHATE (P)	0.000	0.000
SPECIFIC CONDUCTANCE (MICROMHOS)	42	42
WATER TEMPERATURE (DEG C)	17.1	9.5
COLOR (PLATINUM-COBALT UNITS)	15	15
SECCHI-DISC VISIBILITY (FT)	14	
DISSOLVED OXYGEN	9.9	6.5

LAKE SHORELINE COVERED BY EMERSED PLANTS	1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	6/29/72
TIME	1030
NUMBER OF FECAL COLIFORM SAMPLES	5
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	2
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

THE LARGEST AND DEEPEST NATURAL LAKE IN MASON COUNTY. THE LAKE IS FED BY SHUMOCHER CREEK, A PERENNIAL STREAM. A LARGE PARK, RECREATIONAL FACILITIES, AND TWO MARINAS ARE LOCATED ON THE LAKE. MOST OF THE AQUATIC MACROPHYTES WERE OBSERVED IN THE NARROW ARM ON THE NORTH END OF THE LAKE. THE DO WAS DEPLETED ONLY SLIGHTLY IN THE HYPOLIMNION. THE U.S. GEOLOGICAL SURVEY HAS MAINTAINED A LAKE-STAGE RECORDER ON THE LAKE SINCE 1951. IN 1972 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON OCTOBER 5, 1972.



Mason Lake, Mason County. From Washington Department of Game, May 4, 1954.

Mason Lake, Mason County. August 9, 1972. Approx. scale 1:29,000.

MELBOURNE LAKE MASON COUNTY

LATITUDE 47*29'55" LONGITUDE 123* 7'19" T23N-R4W-7
SKOKOMISH RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	2.17 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	730. FT		
LAKE AREA	35. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	240. ACRE-FT		
MEAN DEPTH	7. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	12. FT		
SHORELINE LENGTH	1.3 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.6	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.56	AGRICULTURAL	0 %
BOTTOM SLOPE	0.86 %	FOREST OR UNPRODUCTIVE	97 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	3 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

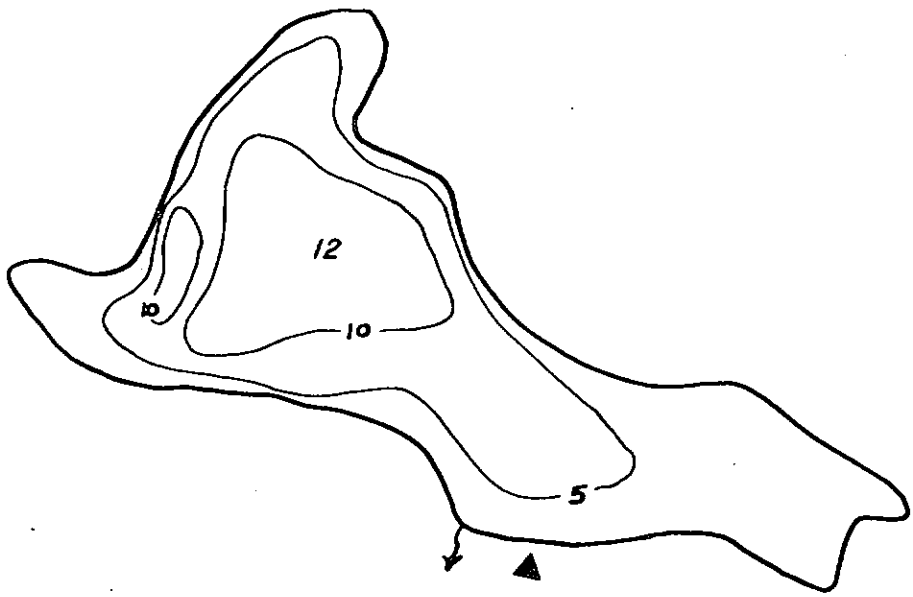
SAMPLE SITE	1	
DATE	8/21/74	
TIME	1450	1455
DEPTH (FT)	3.	7.
TOTAL NITRATE (N)	0.02	0.02
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.05
TOTAL ORGANIC NITROGEN (N)	0.50	0.59
TOTAL PHOSPHORUS (P)	0.010	0.011
TOTAL ORTHOPHOSPHATE (P)	0.004	0.004
SPECIFIC CONDUCTANCE (MICROMHOS)	19	19
WATER TEMPERATURE (DEG C)	19.6	19.3
COLOR (PLATINUM-COBALT UNITS)	5	5
SECCHI-DISC VISIBILITY (FT)	> 8	
DISSOLVED OXYGEN	8.5	8.9

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	51- 75 %

DATE	8/21/74
TIME	1500
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	4
FECAL COLIFORM, MEAN (COL./100ML)	3

REMARKS

A SHALLOW LAKE CHOKED WITH EMERSED AND SUBMERSED AQUATIC VEGETATION. MOST OF THE LAKE BOTTOM WAS COVERED WITH EMERSED PLANTS (PONDWEED). THE LITTORAL BOTTOM IS MUCK AND LITTERED WITH LOGS AND WOOD DEBRIS. THE LAKE WAS USED AT ONE TIME AS A REARING POND FOR SILVER SALMON BY THE DEPARTMENT OF FISHERIES.



N

0 500 1000 FEET

EXPLANATION

—10—
Line of equal
water depth
Interval 5 feet

Melbourne Lake, Mason County. From Washington Department of Game, May 4, 1954.

Melbourne Lake, Mason County. August 25, 1972. Approx. scale 1:12,000.

NAHWATZEL LAKE MASON COUNTY

LATITUDE 47°14' 8" LONGITUDE 123°20' 8" T20N-R5W-8
CHEHALIS RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	6.20 SQ MI	RESIDENTIAL DEVELOPMENT	51 %
ALTITUDE	440. FT		
LAKE AREA	270. ACRES	NUMBER OF NEARSHORE HOMES	86
LAKE VOLUME	4600. ACRE-FT		
MEAN DEPTH	17. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	25. FT		
SHORELINE LENGTH	2.9 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.3	RESIDENTIAL SUBURBAN	2 %
DEVELOPMENT OF VOLUME	0.69	AGRICULTURAL	0 %
BOTTOM SLOPE	0.65 %	FOREST OR UNPRODUCTIVE	91 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	7 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

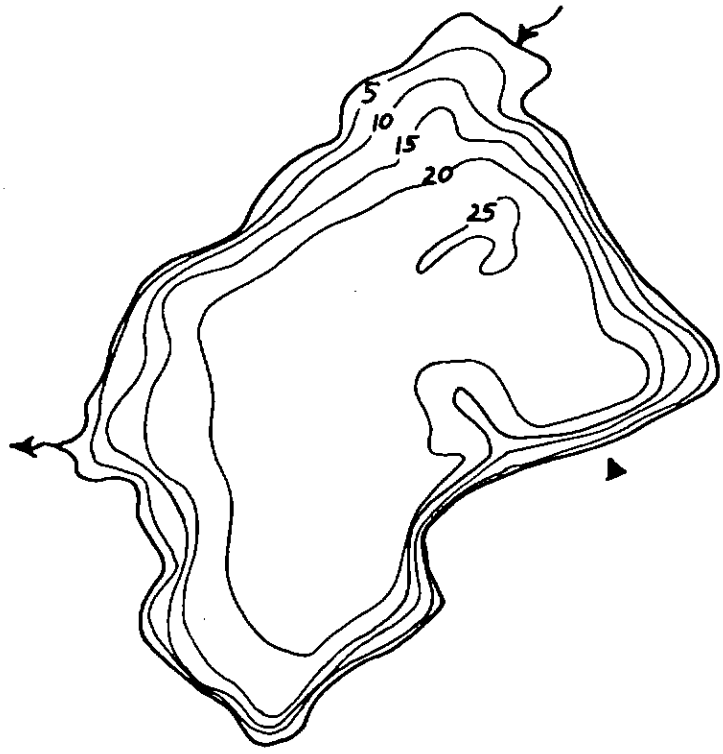
SAMPLE SITE	1	
DATE	8/15/74	
TIME	1155	1200
DEPTH (FT)	3.	20.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.05
TOTAL ORGANIC NITROGEN (N)	0.24	0.19
TOTAL PHOSPHORUS (P)	0.007	0.007
TOTAL ORTHOPHOSPHATE (P)	0.002	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	21	21
WATER TEMPERATURE (DEG C)	19.8	19.3
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	18	
DISSOLVED OXYGEN	8.7	8.6

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/15/74
TIME	1210
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

A LARGE NATURAL LAKE WITH A PARTIALLY UNDEVELOPED SHORELINE. THE LITTORAL ZONE IS MOSTLY GRAVEL AND SUPPORTED A SPARSE GROWTH OF EMERSED PLANTS. SUBMERSED PLANTS (CHARA) WERE GROWING IN DEEP WATER AS INDICATED BY PLANTS ATTACHED TO THE ANCHOR AT A DEPTH OF 24 FEET. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN. LOG PILINGS STAND AT THE NORTHEAST END OF THE LAKE. FLOATING AND SUBMERGED LOGS WERE OBSERVED ALONG THE NORTHWEST SHORE.



N

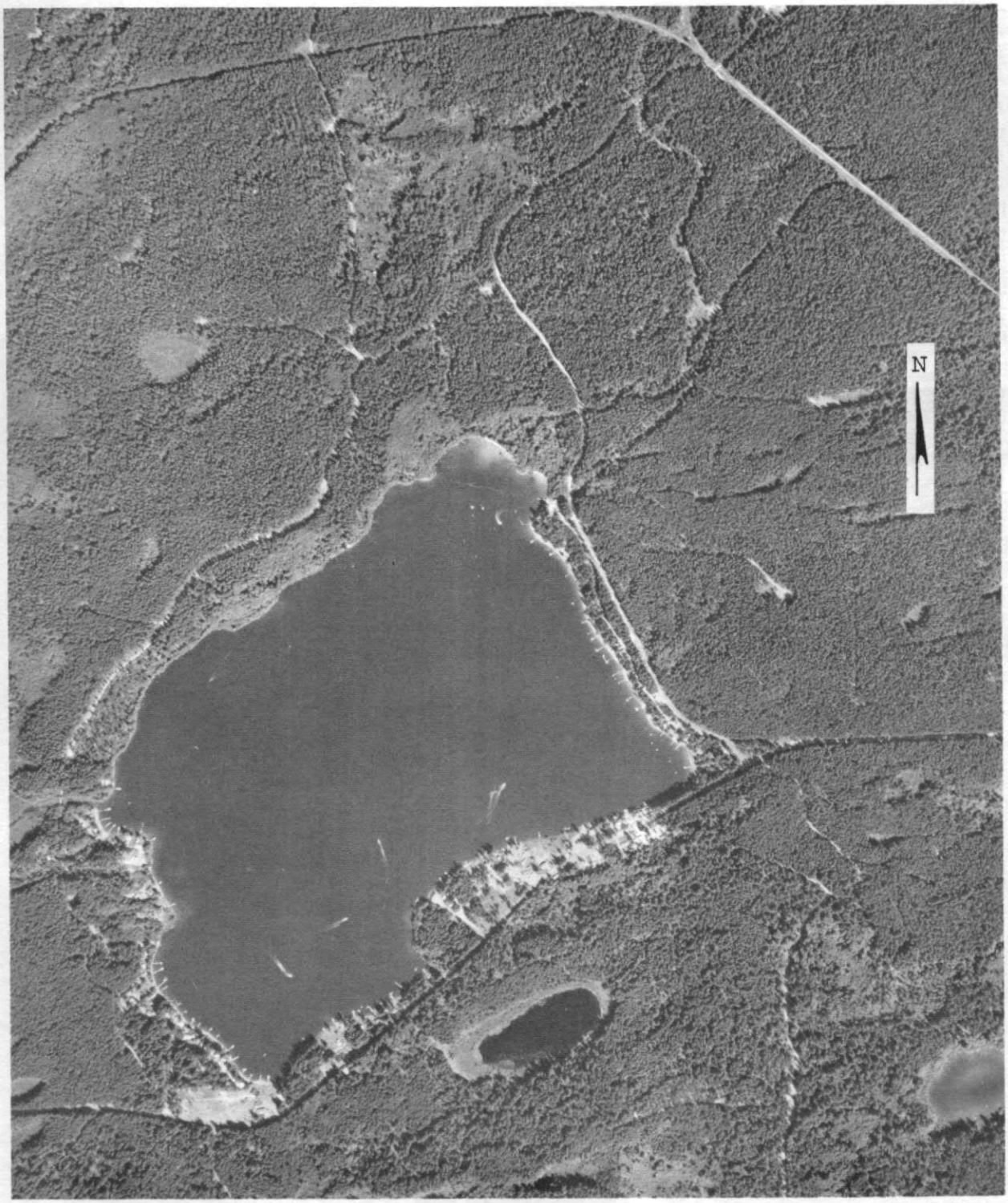
0 1000 2000 FEET

EXPLANATION

— 10 —

Line of equal
water depth
Interval 5 feet

Nahwatzel Lake, Mason County. From Washington Department of Game, June 7, 1949.



Nahwatzel Lake, Mason County. August 27, 1972. Approx. scale 1:12,000.

PHILLIPS LAKE MASON COUNTY

LATITUDE 47°14'52" LONGITUDE 122°57'52" T20N-R2W-5
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.50 SQ MI	RESIDENTIAL DEVELOPMENT	100 %
ALTITUDE	188. FT		
LAKE AREA	110. ACRES	NUMBER OF NEARSHORE HOMES	125
LAKE VOLUME	1800. ACRE-FT		
MEAN DEPTH	16. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	25. FT		
SHORELINE LENGTH	2.6 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.8	RESIDENTIAL SUBURBAN	30 %
DEVELOPMENT OF VOLUME	0.63	AGRICULTURAL	0 %
BOTTOM SLOPE	0.99 %	FOREST OR UNPRODUCTIVE	35 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	35 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

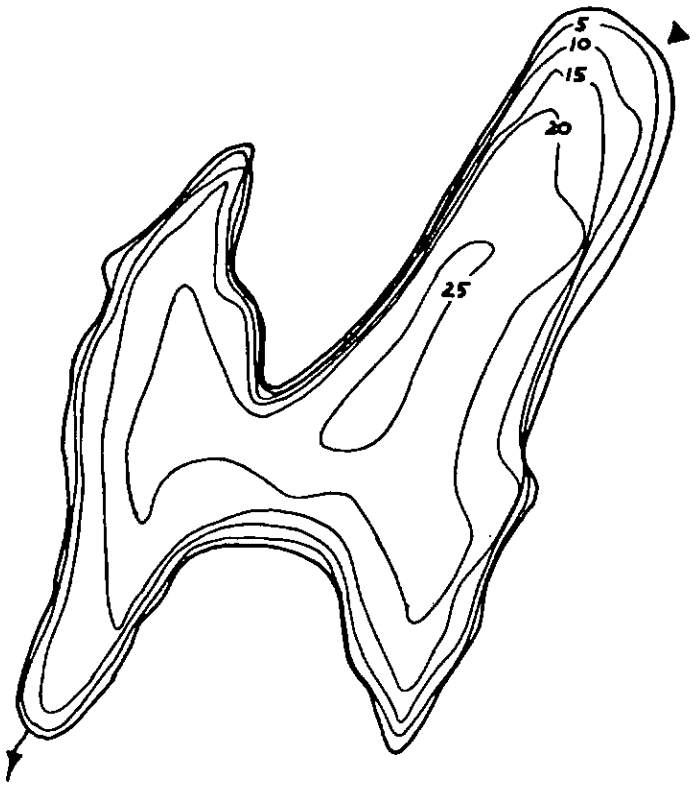
SAMPLE SITE	1	
DATE	6/29/72	
TIME	1340	1350
DEPTH (FT)	3.	16.
DISSOLVED NITRATE (N)	0.00	0.00
DISSOLVED NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.03	0.06
TOTAL ORGANIC NITROGEN (N)	0.30	0.37
TOTAL PHOSPHORUS (P)	0.015	0.038
DISSOLVED ORTHOPHOSPHATE (P)	0.032	0.032
SPECIFIC CONDUCTANCE (MICROMHOS)	20	20
WATER TEMPERATURE (DEG C)	19.7	18.5
COLOR (PLATINUM-COBALT UNITS)	10	10
SECCHI-DISC VISIBILITY (FT)	16	
DISSOLVED OXYGEN	9.1	8.5

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	6/29/72
TIME	1400
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

VERY FEW ROOTED AQUATIC PLANTS WERE FOUND GROWING ON THE SAND AND GRAVEL LITTORAL BOTTOM. IN 1972 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON OCTOBER 17, 1972.



N

0 1000 2000 FEET

EXPLANATION

— 10 —

Line of equal
water depth
Interval 5 feet

Phillips Lake, Mason County. From Washington Department of Game, February 14, 1952.

Phillips Lake, Mason County. August 9, 1972. Approx. scale 1:7900.

PRICE LAKE MASON COUNTY

LATITUDE 47°28'23" LONGITUDE 123° 9'37" T23N-R4W-23
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	3.91 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	780. FT		
LAKE AREA	62. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	380. ACRE-FT		
MEAN DEPTH	6. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	16. FT		
SHORELINE LENGTH	2.0 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.8	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.38	AGRICULTURAL	0 %
BOTTOM SLOPE	0.86 %	FOREST OR UNPRODUCTIVE	98 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	2 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

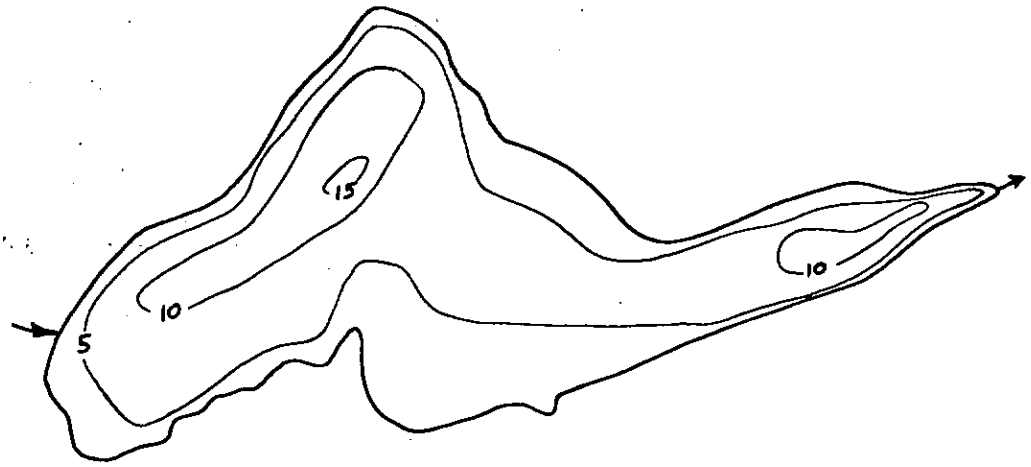
SAMPLE SITE	1	
DATE	8/21/74	
TIME	1405	1410
DEPTH (FT)	3.	7.
TOTAL NITRATE (N)	0.02	0.03
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.06
TOTAL ORGANIC NITROGEN (N)	0.31	0.38
TOTAL PHOSPHORUS (P)	0.010	0.015
TOTAL ORTHOPHOSPHATE (P)	0.002	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	60	60
WATER TEMPERATURE (DEG C)	18.7	18.3
COLOR (PLATINUM-COBALT UNITS)	20	25
SECCHI-DISC VISIBILITY (FT)	8	
DISSOLVED OXYGEN	9.0	9.2

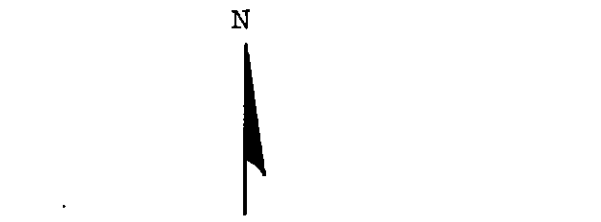
LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	26- 50 %

DATE	8/21/74
TIME	1415
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	1
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

A SHALLOW LAKE CHOKED WITH EMERSED AND SUBMERSED AQUATIC VEGETATION. MOST OF THE LAKE BOTTOM WAS COVERED WITH EMERSED PLANTS (PONDWEED). THE LITTORAL BOTTOM IS MUCK AND LITTERED WITH LOGS AND WOOD DEBRIS.





EXPLANATION

— 10 —

Line of equal
water depth
Interval 5 feet

Price Lake, Mason County. From Washington Department of Game, July 24, 1959.

Price Lake, Mason County. August 25, 1972. Approx. scale 1:12,000.

PRICKETT LAKE MASON COUNTY

LATITUDE 47°22'35" LONGITUDE 122°53'29" T22N-R2W-23
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.39 SQ MI	RESIDENTIAL DEVELOPMENT	35 %
ALTITUDE	301. FT		
LAKE AREA	74. ACRES	NUMBER OF NEARSHORE HOMES	41
LAKE VOLUME	990. ACRE-FT		
MEAN DEPTH	13. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	30. FT		
SHORELINE LENGTH	1.7 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.4	RESIDENTIAL SUBURBAN	11 %
DEVELOPMENT OF VOLUME	0.45	AGRICULTURAL	3 %
BOTTOM SLOPE	1.5 %	FOREST OR UNPRODUCTIVE	56 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	30 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

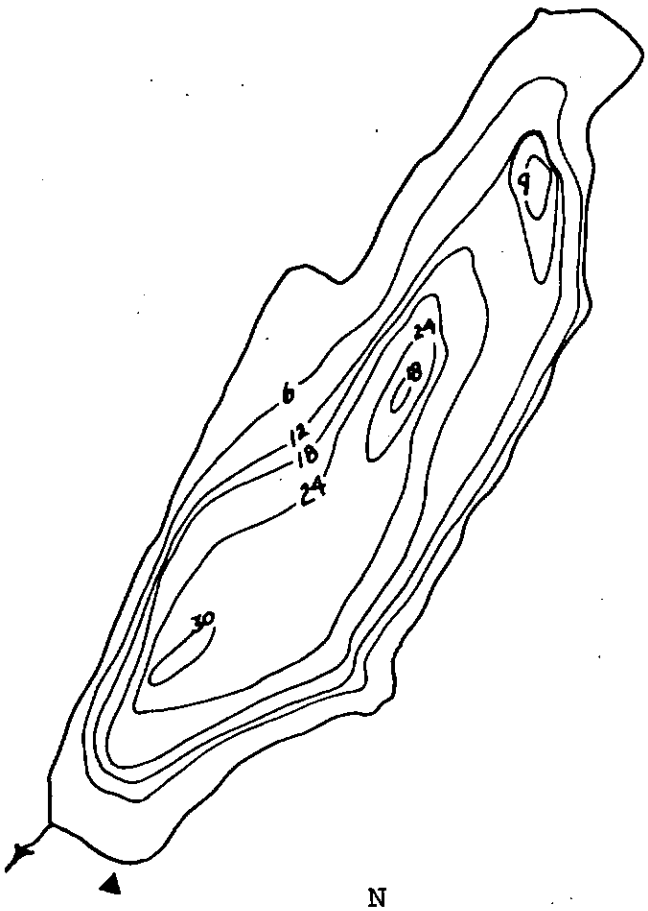
SAMPLE SITE	1	
DATE	8/27/74	
TIME	1230	1235
DEPTH (FT)	3.	20.
TOTAL NITRATE (N)	0.00	0.00
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.07	0.05
TOTAL ORGANIC NITROGEN (N)	0.36	0.43
TOTAL PHOSPHORUS (P)	0.009	0.018
TOTAL ORTHOPHOSPHATE (P)	0.005	0.004
SPECIFIC CONDUCTANCE (MICROMHOS)	14	14
WATER TEMPERATURE (DEG C)	22.0	20.5
COLOR (PLATINUM-COBALT UNITS)	5	10
SECCHI-DISC VISIBILITY (FT)	12	
DISSOLVED OXYGEN	8.4	8.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

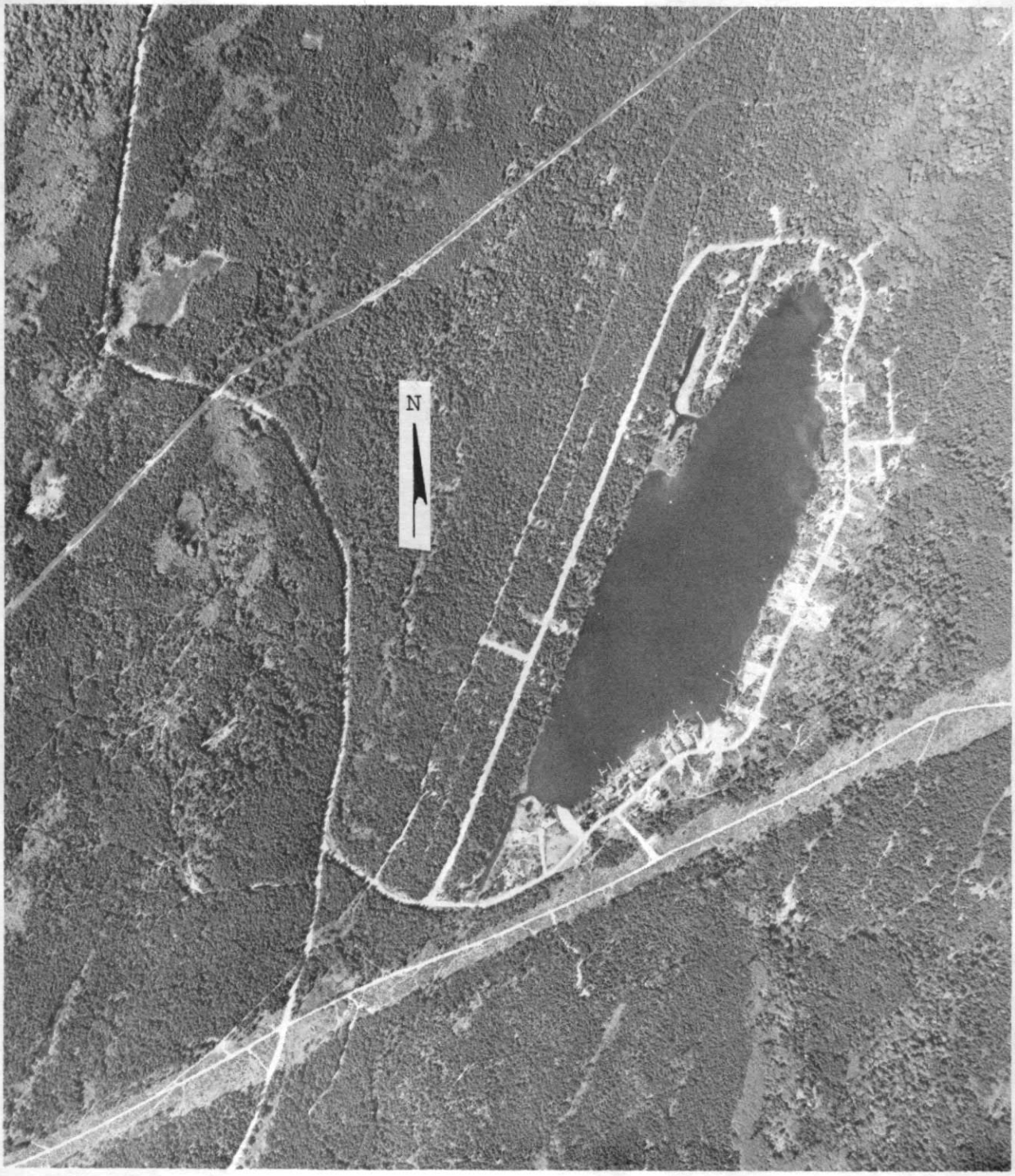
DATE	8/27/74
TIME	1300
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	8
FECAL COLIFORM, MEAN (COL./100ML)	3

REMARKS

CHANNELS HAVE BEEN DREDGED NEAR THE SOUTH AND NORTHWEST ENDS OF THE LAKE. THE LITTORAL BOTTOM IS MUCK AND THE NEARSHORE BEACH IS GRAVEL. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN.



Prickett Lake, Mason County. From Washington Department of Fisheries, June 6, 1957.



Prickett Lake, Mason County. May 12, 1972. Approx. scale 1:12,000.

SIMPSON LAKE MASON COUNTY

LATITUDE 47* 7'52" LONGITUDE 123*20'26" T19N-R5W-17
CHEHALIS RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.68 SQ MI	RESIDENTIAL DEVELOPMENT	3 %
ALTITUDE	330. FT		
LAKE AREA	29. ACRES	NUMBER OF NEARSHORE HOMES	2
LAKE VOLUME	310. ACRE-FT		
MEAN DEPTH	11. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	17. FT		
SHORELINE LENGTH	0.90 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	2 %
DEVELOPMENT OF VOLUME	0.63	AGRICULTURAL	0 %
BOTTOM SLOPE	1.3 %	FOREST OR UNPRODUCTIVE	91 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	7 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

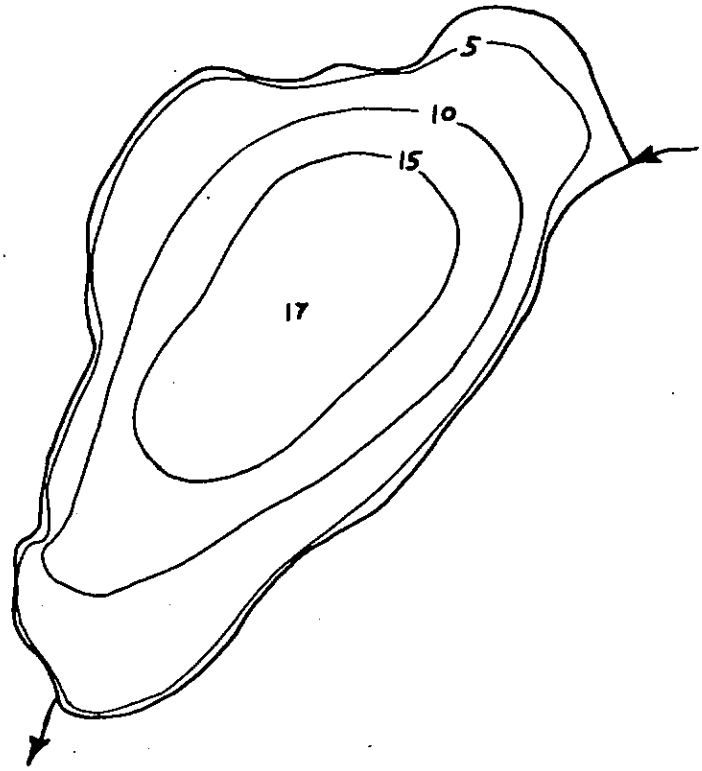
SAMPLE SITE	1	
DATE	8/15/74	
TIME	1330	1335
DEPTH (FT)	3.	10.
TOTAL NITRATE (N)	0.01	0.02
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.08	0.08
TOTAL ORGANIC NITROGEN (N)	0.44	0.37
TOTAL PHOSPHORUS (P)	0.011	0.014
TOTAL ORTHOPHOSPHATE (P)	0.002	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	50	50
WATER TEMPERATURE (DEG C)	19.9	19.1
COLOR (PLATINUM-COBALT UNITS)	15	15
SECCHI-DISC VISIBILITY (FT)	>14	
DISSOLVED OXYGEN	8.4	8.4

LAKE SHORELINE COVERED BY EMERSED PLANTS	51- 75 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/15/74
TIME	1340
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

AN EXTENSIVE NETWORK OF CHANNELS HAS BEEN DREDGED TO INCREASE WATERFRONT TO A PROPOSED RESIDENTIAL DEVELOPMENT. SUBMERSED PLANTS WERE THINLY SCATTERED AND PATCHY NEAR THE SHORELINE, BUT A HEAVY GROWTH OF SUBMERSED PLANTS (WATER MILFOIL) COVERED THE LAKE BOTTOM. THE LITTORAL BOTTOM IS MUCK.



N

0 500 1000 FEET

EXPLANATION

— 10 —

Line of equal
water depth
Interval 5 feet

Simpson Lake, Mason County. From Washington Department of Game, June 1, 1946.

Simpson Lake, Mason County. June 30, 1974. Approx. scale 1:4800.

SPENCER LAKE MASON COUNTY

LATITUDE 41°75'33" LONGITUDE 122°58'11" T21N-R2W-32
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.68 SQ MI	RESIDENTIAL DEVELOPMENT	33 %
ALTITUDE	170. FT		
LAKE AREA	230. ACRES	NUMBER OF NEARSHORE HOMES	89
LAKE VOLUME	5200. ACRE-FT		
MEAN DEPTH	22. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	36. FT		
SHORELINE LENGTH	4.3 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.0	RESIDENTIAL SUBURBAN	4 %
DEVELOPMENT OF VOLUME	0.62	AGRICULTURAL	3 %
BOTTOM SLOPE	1.0 %	FOREST OR UNPRODUCTIVE	72 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	21 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1	
DATE	8/20/74	
TIME	1440	1445
DEPTH (FT)	3.	26.
TOTAL NITRATE (N)	0.00	0.00
TOTAL NITRITE (N)	0.01	0.01
TOTAL AMMONIA (N)	0.06	0.06
TOTAL ORGANIC NITROGEN (N)	0.77	0.43
TOTAL PHOSPHORUS (P)	0.009	0.018
TOTAL ORTHOPHOSPHATE (P)	0.003	0.004
SPECIFIC CONDUCTANCE (MICROMHOS)	30	30
WATER TEMPERATURE (DEG C)	19.6	16.3
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	10	
DISSOLVED OXYGEN	9.0	0.5

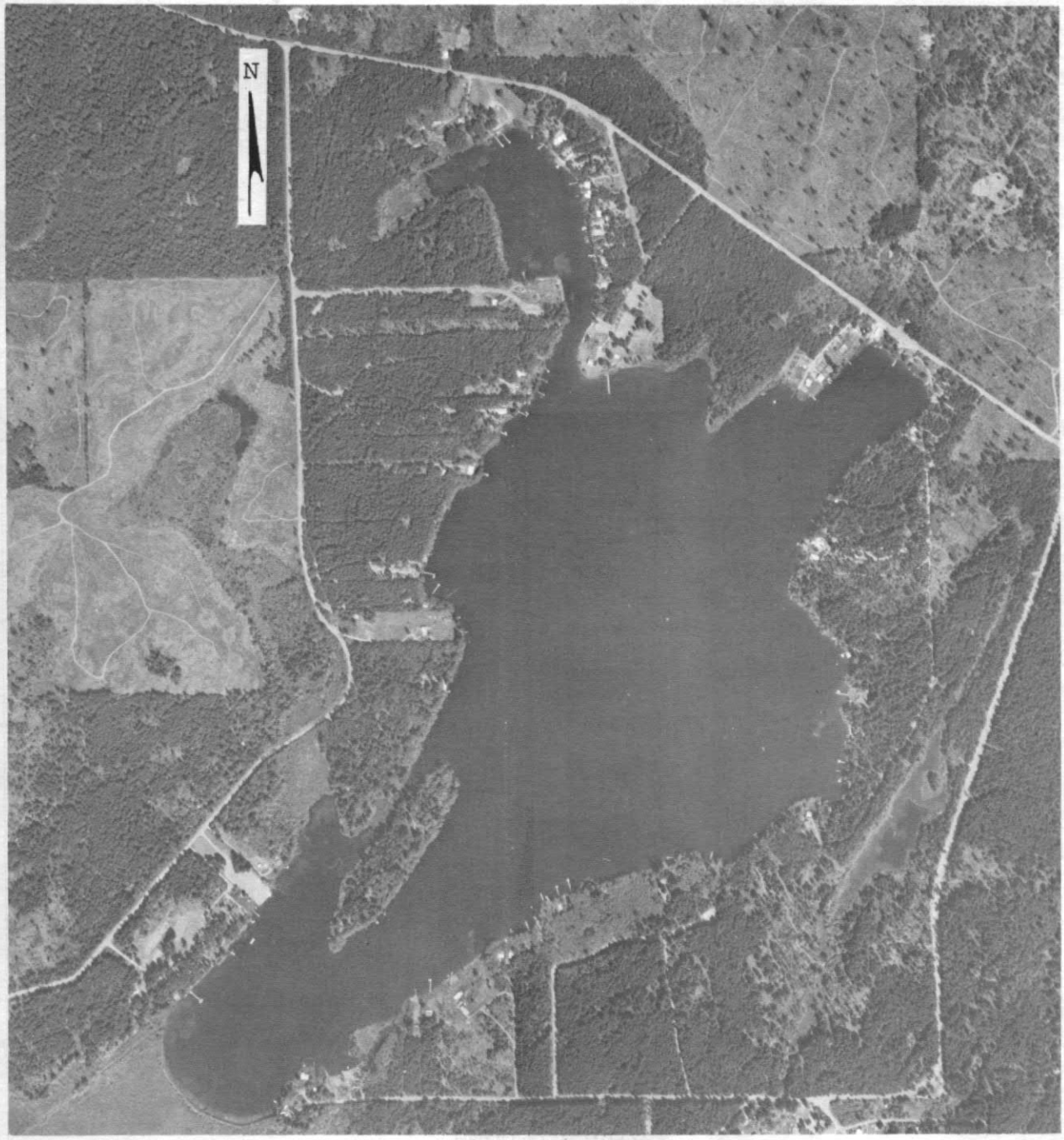
LAKE SHORELINE COVERED BY EMERSED PLANTS	51- 75 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/20/74
TIME	1500
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	20
FECAL COLIFORM, MEAN (COL./100ML)	8

REMARKS

DENSE BEDS OF EMERSED PLANTS WERE OBSERVED IN THE SHALLOW NORTH BAY AND THE SOUTHWEST BAY NEAR THE OUTLET.

Spencer Lake, Mason County. From Washington Department of Game, July 30, 1947.



Spencer Lake, Mason County. May 12, 1972. Approx. scale 1:12,000.

STUMP LAKE MASON COUNTY

LATITUDE 47° 6' 4" LONGITUDE 123°19'33" T19N-R5W-28
CHEHALIS RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	19.8 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	300. FT		
LAKE AREA	29. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	260. ACRE-FT		
MEAN DEPTH	9. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	21. FT		
SHORELINE LENGTH	1.5 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.0	RESIDENTIAL SUBURBAN	<1 %
DEVELOPMENT OF VOLUME	0.44	AGRICULTURAL	<1 %
BOTTOM SLOPE	1.7 %	FOREST OR UNPRODUCTIVE	99 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	1 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

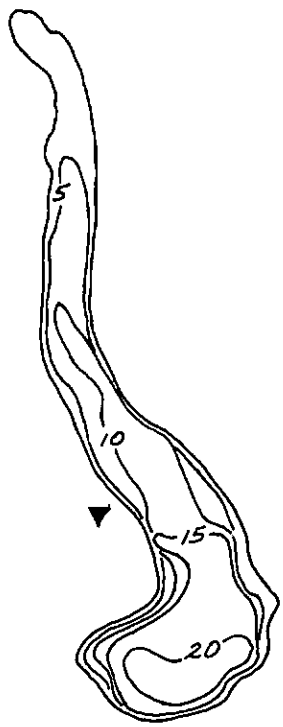
SAMPLE SITE	1	
DATE	8/15/74	
TIME	1420	1425
DEPTH (FT)	3.	16.
TOTAL NITRATE (N)	0.02	0.00
TOTAL NITRITE (N)	0.00	0.01
TOTAL AMMONIA (N)	0.09	2.0
TOTAL ORGANIC NITROGEN (N)	0.64	0.40
TOTAL PHOSPHORUS (P)	0.041	0.091
TOTAL ORTHOPHOSPHATE (P)	0.008	0.66
SPECIFIC CONDUCTANCE (MICROMHOS)	66	110
WATER TEMPERATURE (DEG C)	19.3	11.1
COLOR (PLATINUM-COBALT UNITS)	10	75
SECCHI-DISC VISIBILITY (FT)	8	
DISSOLVED OXYGEN	9.7	0.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/15/74
TIME	1440
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	1
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

THE LAKE IS AN OLD CREEK CHANNEL FILLED WITH STUMPS AND DEBRIS. TREES OVERHANG THE WATER AT THE SHORELINE. SUBMERSED PLANTS COVERED MOST OF THE LAKE BOTTOM, WHICH IS SOFT MUCK. AN ALGAL BLOOM WAS OBSERVED.



N

0 1000 2000 FEET

EXPLANATION

—10—

Line of equal
water depth
Interval 5 feet

Stump Lake, Mason County. From
U.S. Geological Survey, May 29, 1974.

Stump Lake, Mason County. August 25, 1972. Approx. scale 1:12,000.

TEE LAKE MASON COUNTY

LATITUDE 47°25'46" LONGITUDE 123° 1'24" T22N-R3W-2
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.97 SQ MI	RESIDENTIAL DEVELOPMENT	28 %
ALTITUDE	390. FT		
LAKE AREA	47. ACRES	NUMBER OF NEARSHORE HOMES	23
LAKE VOLUME	420. ACRE-FT		
MEAN DEPTH	9. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	17. FT		
SHORELINE LENGTH	1.7 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.8	RESIDENTIAL SUBURBAN	3 %
DEVELOPMENT OF VOLUME	0.52	AGRICULTURAL	0 %
BOTTOM SLOPE	1.0 %	FOREST OR UNPRODUCTIVE	89 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	8 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

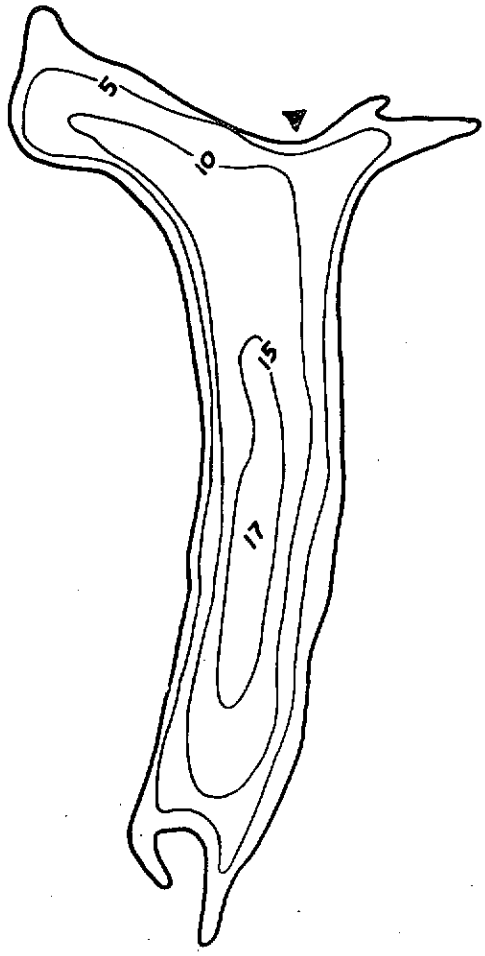
SAMPLE SITE	1	
DATE	8/26/74	
TIME	1230	1235
DEPTH (FT)	3.	13.
TOTAL NITRATE (N)	0.02	0.02
TOTAL NITRITE (N)	0.00	0.01
TOTAL AMMONIA (N)	0.05	0.09
TOTAL ORGANIC NITROGEN (N)	0.24	0.25
TOTAL PHOSPHORUS (P)	0.010	0.014
TOTAL ORTHOPHOSPHATE (P)	0.005	0.005
SPECIFIC CONDUCTANCE (MICROMHOS)	21	21
WATER TEMPERATURE (DEG C)	21.5	20.2
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	8	
DISSOLVED OXYGEN	9.0	8.0

LAKE SHORELINE COVERED BY EMERSED PLANTS	51- 75 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

DATE	8/26/74
TIME	1230
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

EMERSED PLANTS WERE SCATTERED IN PATCHES ALONG THE SHORELINE AND IN DENSE BEDS IN THE BAY AREAS. SUBMERSED PLANTS (PONDWEED) COVERED A LARGE PERCENTAGE OF THE LAKE BOTTOM. FLOATING LOGS AND WOOD DEBRIS COVERED THE SHORELINE LOCALLY. THE LITTORAL BOTTOM IN THE BAY AREAS IS MOSTLY MUCK.

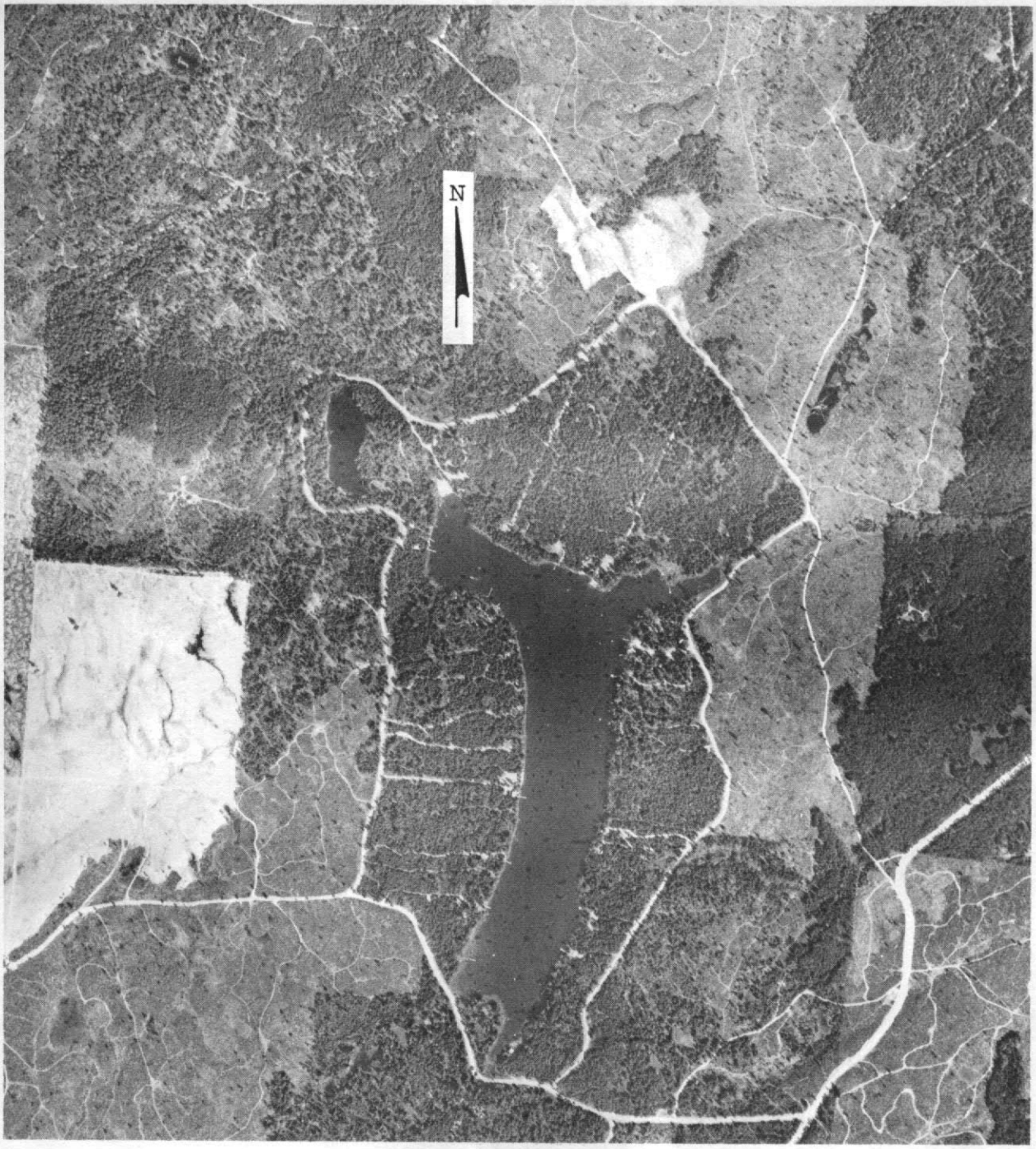


0 500 1000 FEET

EXPLANATION

—10—
Line of equal
water depth
Interval 5 feet

Tee Lake, Mason County. From Washington Department of Game, June 12, 1950.



Tee Lake, Mason County. May 12, 1972. Approx. scale 1:12,000.

TIGER LAKE MASON COUNTY

LATITUDE 47*30'31" LONGITUDE 122*50' 8" T23N-R1W-5
PUGET SOUND BASIN

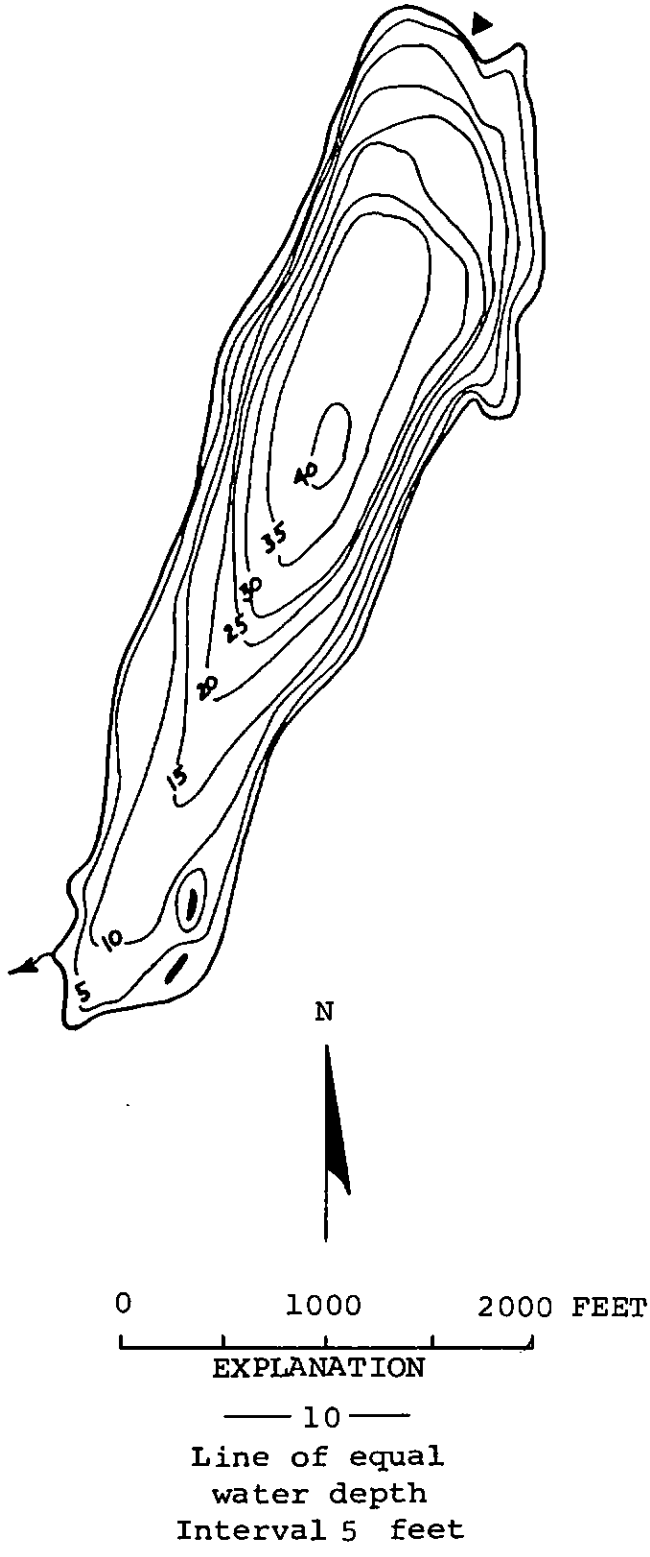
PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.70 SQ MI	RESIDENTIAL DEVELOPMENT	100 %
ALTITUDE	496. FT		
LAKE AREA	110. ACRES	NUMBER OF NEARSHORE HOMES	80
LAKE VOLUME	2100. ACRE-FT		
MEAN DEPTH	19. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	40. FT		
SHORELINE LENGTH	2.5 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.7	RESIDENTIAL SUBURBAN	14 %
DEVELOPMENT OF VOLUME	0.48	AGRICULTURAL	0 %
BOTTOM SLOPE	1.6 %	FOREST OR UNPRODUCTIVE	61 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	25 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1	
DATE	6/73/20	
TIME	950	1000
DEPTH (FT)	3.	33.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.03	0.07
TOTAL ORGANIC NITROGEN (N)	0.07	0.06
TOTAL PHOSPHORUS (P)	0.004	0.061
TOTAL ORTHOPHOSPHATE (P)	0.001	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	--	--
WATER TEMPERATURE (DEG C)	17.8	15.5
COLOR (PLATINUM-COBALT UNITS)	0	5
SECCHI-DISC VISIBILITY (FT)	12	
DISSOLVED OXYGEN	9.2	5.7
LAKE SHORELINE COVERED BY EMERSED PLANTS	11- 25 %	
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %	
DATE	6/20/73	
TIME	1035	
NUMBER OF FECAL COLIFORM SAMPLES	4	
FECAL COLIFORM, MINIMUM (COL./100ML)	<1	
FECAL COLIFORM, MAXIMUM (COL./100ML)	30	
FECAL COLIFORM, MEAN (COL./100ML)	10	

REMARKS

THE LITTORAL BOTTOM OF GRAVEL, COBBLE, AND SAND SUPPORTED A SPARSE GROWTH OF AQUATIC MACROPHYTES. IN 1973 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON AUGUST 14, 1973.



Tiger Lake, Mason County. From Washington Department of Game, June 18, 1952.

Tiger Lake, Mason County. May 28, 1972. Approx. scale 1:12,000.

TIMBER LAKE MASON COUNTY

LATITUDE 47°13'26" LONGITUDE 122°58'48" T20N-R2W-18
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.82 SQ MI	RESIDENTIAL DEVELOPMENT	31 %
ALTITUDE	180. FT		
LAKE AREA	82. ACRES	NUMBER OF NEARSHORE HOMES	17
LAKE VOLUME	780. ACRE-FT		
MEAN DEPTH	10. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	21. FT		
SHORELINE LENGTH	2.8 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.2	RESIDENTIAL SUBURBAN	10 %
DEVELOPMENT OF VOLUME	0.46	AGRICULTURAL	0 %
BOTTOM SLOPE	0.99 %	FOREST OR UNPRODUCTIVE	83 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	7 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

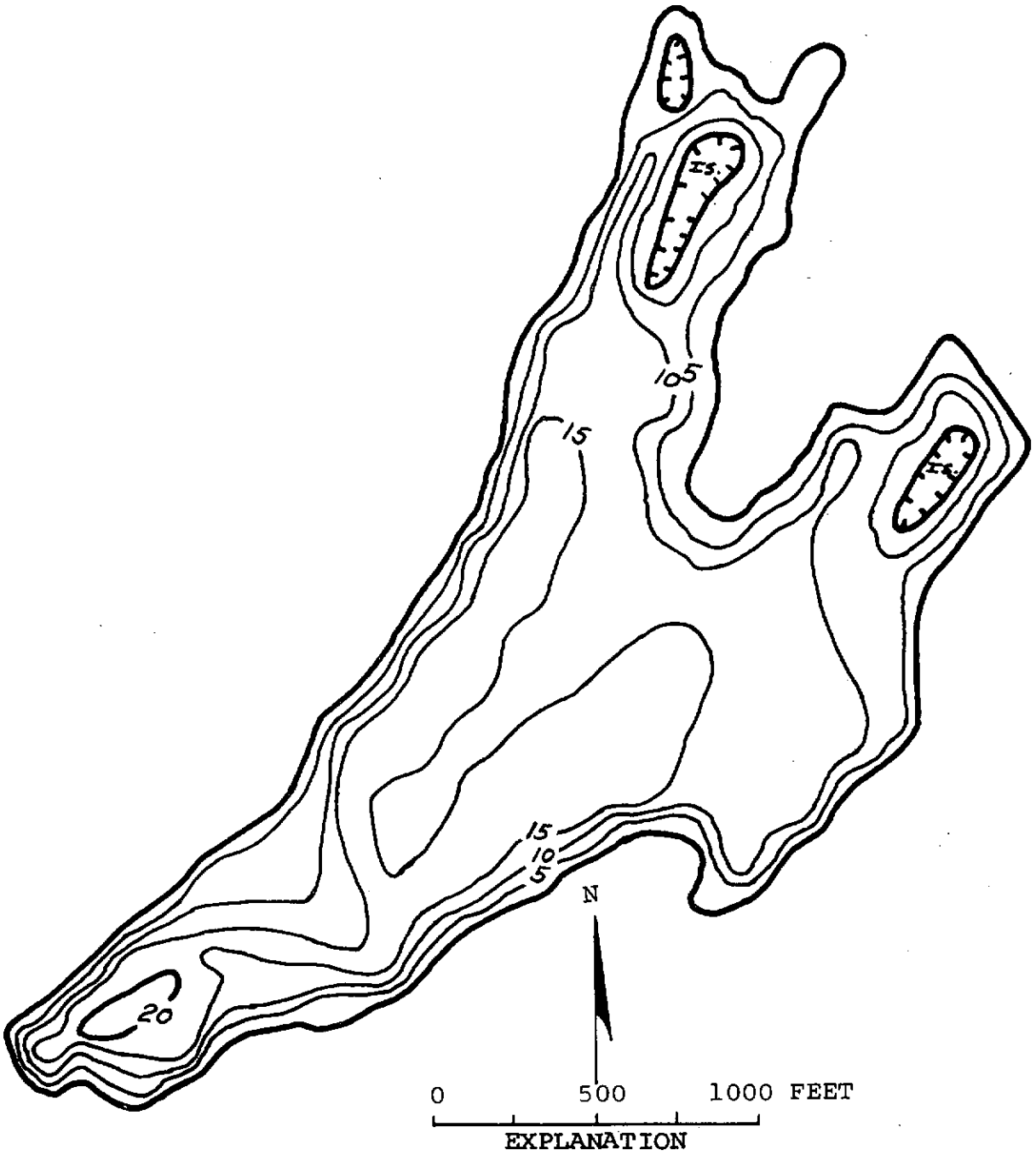
SAMPLE SITE	1	
DATE	8/20/74	
TIME	1320	1325
DEPTH (FT)	3.	11.
TOTAL NITRATE (N)	0.01	0.00
TOTAL NITRITE (N)	0.01	0.01
TOTAL AMMONIA (N)	0.08	0.07
TOTAL ORGANIC NITROGEN (N)	0.37	0.44
TOTAL PHOSPHORUS (P)	0.014	0.011
TOTAL ORTHOPHOSPHATE (P)	0.006	0.004
SPECIFIC CONDUCTANCE (MICROMHOS)	40	40
WATER TEMPERATURE (DEG C)	19.6	19.0
COLOR (PLATINUM-COBALT UNITS)	30	30
SECCHI-DISC VISIBILITY (FT)	5	
DISSOLVED OXYGEN	8.3	8.0

LAKE SHORELINE COVERED BY EMERSED PLANTS	11- 25 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/20/74
TIME	1340
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	13
FECAL COLIFORM, MEAN (COL./100ML)	6

REMARKS

A RECENT ARTIFICIAL LAKE CREATED BY DREDGING THE SWAMPY LAND AND DAMMING THE OUTLET CREEK. THE LAKE IS FED BY PHILLIPS LAKE VIA A LARGE MARSH. A DENSE COVER OF SUBMERSED PLANTS (ELODEA) WAS OBSERVED LOCALLY IN THE LAKE.



Timber Lake, Mason County. From
U.S. Geological Survey, December 27, 1973.

Timber Lake, Mason County. September 2, 1973. Approx. scale 1:12,000.

WOOTEN LAKE MASON COUNTY

LATITUDE 47°27'55" LONGITUDE 122°58'57" T23N-R2W-19
TAHUYA RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.32 SQ MI	RESIDENTIAL DEVELOPMENT	58 %
ALTITUDE	407. FT		
LAKE AREA	68. ACRES	NUMBER OF NEARSHORE HOMES	47
LAKE VOLUME	1500. ACRE-FT		
MEAN DEPTH	23. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	36. FT		
SHORELINE LENGTH	1.5 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.3	RESIDENTIAL SUBURBAN	19 %
DEVELOPMENT OF VOLUME	0.63	AGRICULTURAL	0 %
BOTTOM SLOPE	1.8 %	FOREST OR UNPRODUCTIVE	48 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	33 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

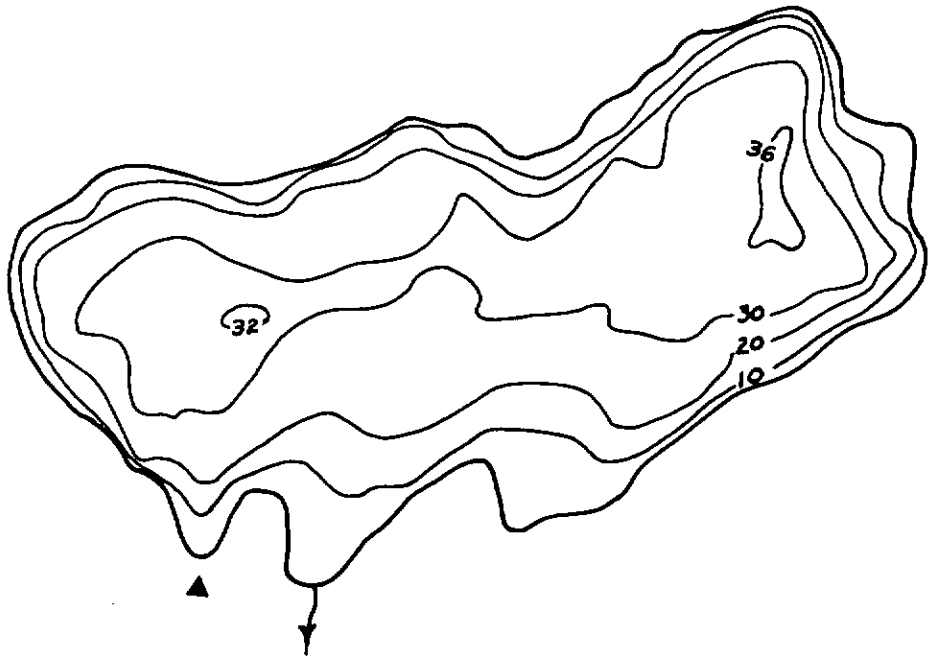
SAMPLE SITE	1	
DATE	8/22/74	
TIME	1145	1150
DEPTH (FT)	3.	23.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.04	0.08
TOTAL ORGANIC NITROGEN (N)	0.36	0.26
TOTAL PHOSPHORUS (P)	0.005	0.005
TOTAL ORTHOPHOSPHATE (P)	0.002	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	30	25
WATER TEMPERATURE (DEG C)	21.0	20.0
COLOR (PLATINUM-COBALT UNITS)	15	10
SECCHI-DISC VISIBILITY (FT)	15	
DISSOLVED OXYGEN	8.8	8.4

LAKE SHORELINE COVERED BY EMERSED PLANTS	11- 25 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/22/74
TIME	1200
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	6
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

THE LAKE DRAINS TO HAVEN LAKE. THE SHORES ARE GRAVEL AND SUPPORTED ONLY THINLY SCATTERED EMERSED PLANTS. THE DO WAS NEAR SATURATION THROUGHOUT THE ENTIRE WATER COLUMN.



N

0 500 1000 FEET

EXPLANATION

— 20 —

Line of equal
water depth
Interval 10 feet

Wooten Lake, Mason County. From Washington Department of Game, July 23, 1948.

Wooten Lake, Mason County. August 24, 1972. Approx. scale 1:12,000.

ALDER LAKE PIERCE COUNTY

LATITUDE 46°48' 9" LONGITUDE 122°18'37" T15N-R4E-9
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	286. SQ MI	RESIDENTIAL DEVELOPMENT	5 %
ALTITUDE	1207. FT		
LAKE AREA	3100. ACRES	NUMBER OF NEARSHORE HOMES	27
LAKE VOLUME	230000. ACRE-FT		
MEAN DEPTH	75. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	290. FT		
SHORELINE LENGTH	28. MI	RESIDENTIAL URBAN	<1 %
SHORELINE CONFIGURATION	3.6	RESIDENTIAL SUBURBAN	<1 %
DEVELOPMENT OF VOLUME	0.26	AGRICULTURAL	1 %
BOTTOM SLOPE	2.2 %	FOREST OR UNPRODUCTIVE	97 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	2 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

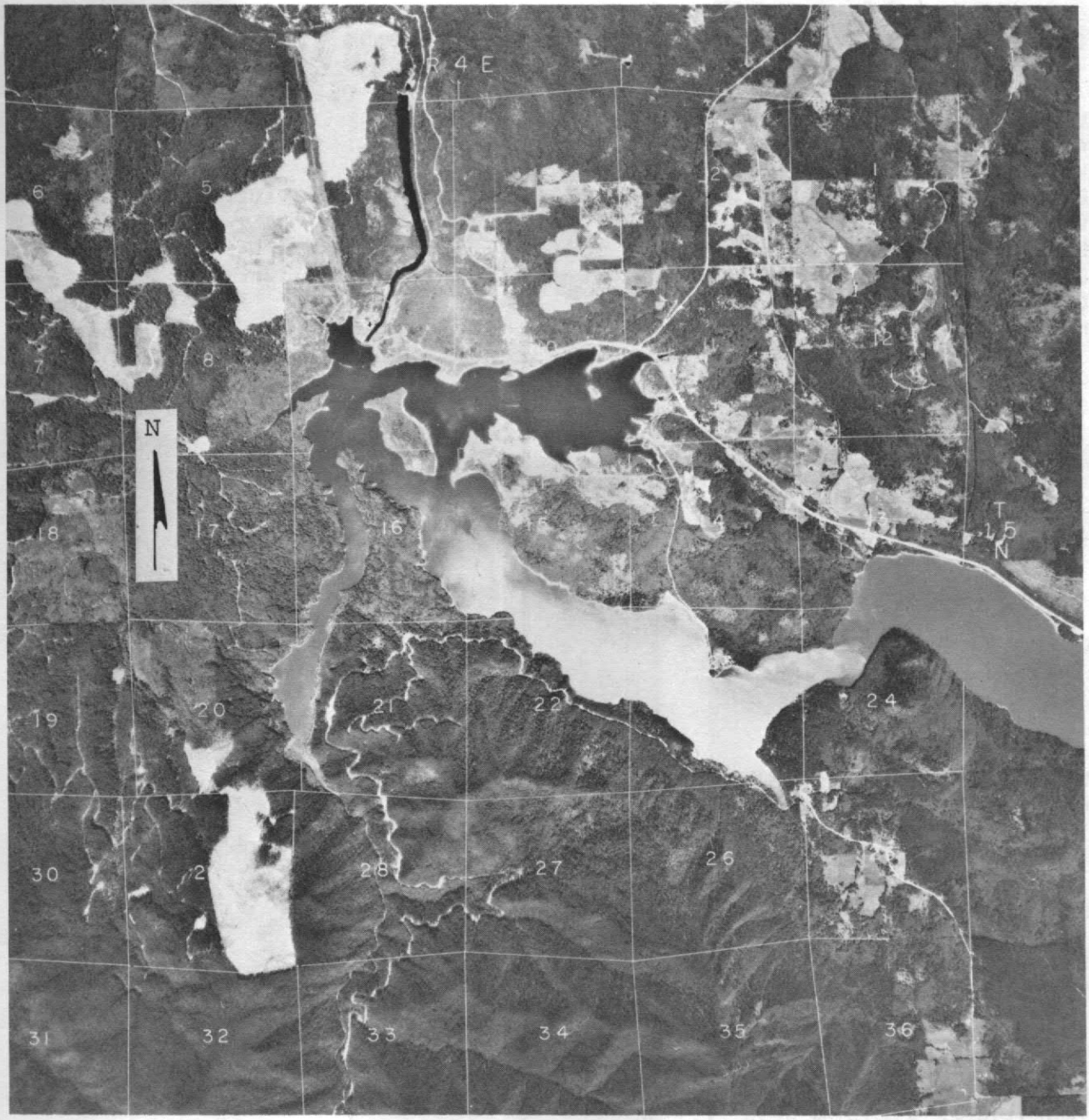
SAMPLE SITE	1		2	
DATE	8/22/74		8/22/74	
TIME	1110	1115	1210	1215
DEPTH (FT)	3.	164.	3.	62.
TOTAL NITRATE (N)	0.00	0.00	0.00	0.01
TOTAL NITRITE (N)	0.01	0.03	0.01	0.00
TOTAL AMMONIA (N)	0.15	0.41	0.10	0.09
TOTAL ORGANIC NITROGEN (N)	0.13	--	0.24	0.07
TOTAL PHOSPHORUS (P)	0.029	0.11	0.020	0.013
TOTAL ORTHOPHOSPHATE (P)	0.019	0.039	0.011	0.006
SPECIFIC CONDUCTANCE (MICROMHOS)	40	40	40	40
WATER TEMPERATURE (DEG C)	17.5	11.3	17.9	12.8
COLOR (PLATINUM-COBALT UNITS)	0	15	0	0
SECCHI-DISC VISIBILITY (FT)	2		4	
DISSOLVED OXYGEN	9.2	8.9	9.4	6.8

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/22/74
TIME	1300
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	5
FECAL COLIFORM, MEAN (COL./100ML)	3

REMARKS

A HYDROPOWER RESERVOIR LOCATED ON THE NISQUALLY RIVER. THE SURFACE WATER OF THE RESERVOIR LIES IN PIERCE, THURSTON, AND LEWIS COUNTY. THE LAKE RECEIVES MELTWATER FROM THE NISQUALLY GLACIER ON MT RAINIER. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN AT ONE SAMPLING SITE. AT THE OTHER SAMPLING SITE DO WAS ONLY PARTIALLY DEPLETED NEAR THE LAKE BOTTOM. FLOATING AND SUBMERGED LOGS COVERED THE SHORELINE.
THE U.S. GEOLOGICAL SURVEY HAS MAINTAINED A WATER-STAGE RECORDER ON THE LAKE SINCE 1944.



Alder Lake, Pierce County. July 3, 1971. Approx. scale 1:63,000.

AMERICAN LAKE PIERCE COUNTY

LATITUDE 47° 6'30" LONGITUDE 122°35'18" T19N-R2E-20
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	25.4 SQ MI	RESIDENTIAL DEVELOPMENT	53 %
ALTITUDE	235. FT		
LAKE AREA	1100. ACRES	NUMBER OF NEARSHORE HOMES	250
LAKE VOLUME	60000. ACRE-FT		
MEAN DEPTH	53. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	90. FT		
SHORELINE LENGTH	12. MI	RESIDENTIAL URBAN	32 %
SHORELINE CONFIGURATION	2.5	RESIDENTIAL SUBURBAN	6 %
DEVELOPMENT OF VOLUME	0.59	AGRICULTURAL	0 %
BOTTOM SLOPE	8.2 %	FOREST OR UNPRODUCTIVE	55 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	7 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

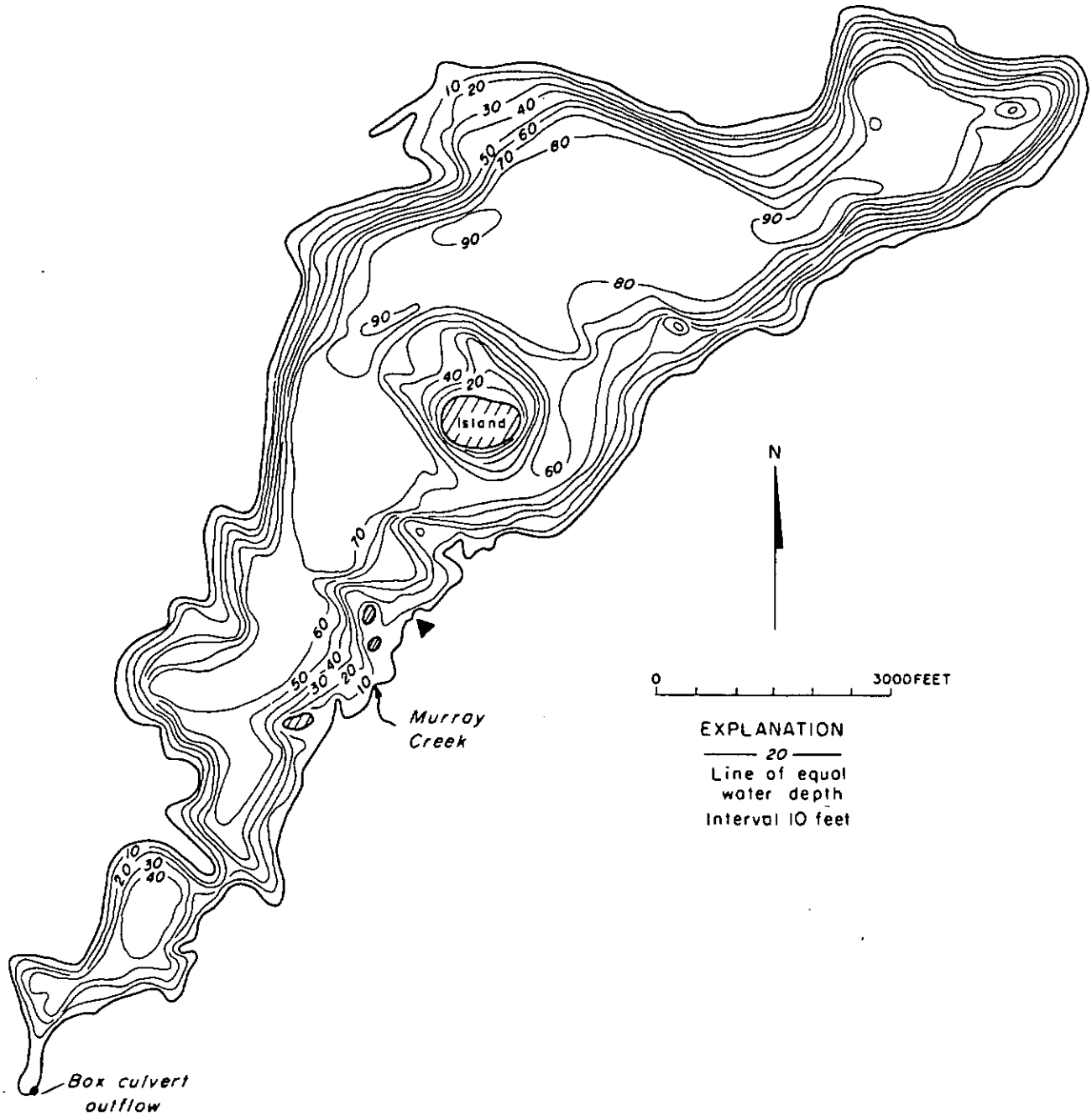
SAMPLE SITE	1	
DATE	8/11/71	
TIME	1500	1510
DEPTH (FT)	3.	85.
DISSOLVED NITRATE (N)	0.02	0.02
TOTAL NITRITE (N)	--	--
TOTAL AMMONIA (N)	0.02	1.1
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.000	0.090
DISSOLVED ORTHOPHOSPHATE (P)	0.000	0.090
SPECIFIC CONDUCTANCE (MICROMHOS)	95	116
WATER TEMPERATURE (DEG C)	24.7	8.2
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	22	
DISSOLVED OXYGEN	8.9	0.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/21/74
TIME	1330
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

THE LARGEST NATURAL LAKE IN PIERCE COUNTY. THE LAKE LIES PARTLY ON THE FORT LEWIS MILITARY RESERVATION. THE REST OF THE SHORELINE IS URBAN. MURRAY CREEK, THE MAIN SURFACE-WATER INFLOW, DRAINS THROUGH THE MILITARY RESERVATION. NO NATURAL OUTLET EXISTS, BUT IN 1956 A BOX CULVERT WAS INSTALLED WHICH OVERFLOWS TO SEQUALLITCHEW CREEK. THE LAKE RECEIVES HEAVY RECREATIONAL USE. THE GRAVEL LITTORAL BOTTOM SUPPORTED FEW AQUATIC MACROPHYTES. IN 1971 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE SIX TIMES. THE PLANT SURVEY WAS MADE ON SEPTEMBER 13, 1971.



American Lake, Pierce County. From Washington Department of Game, May 24, 1953.

American Lake, Pierce County. December 7, 1971. Approx. scale 1:27,000.

BAY LAKE PIERCE COUNTY

LATITUDE 47°14'24" LONGITUDE 122°45'22" T20N-R1W-12
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.00 SQ MI	RESIDENTIAL DEVELOPMENT	25 %
ALTITUDE	27. FT		
LAKE AREA	140. ACRES	NUMBER OF NEARSHORE HOMES	9
LAKE VOLUME	1100. ACRE-FT		
MEAN DEPTH	8. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	11. FT		
SHORELINE LENGTH	1.9 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.1	RESIDENTIAL SUBURBAN	<1 %
DEVELOPMENT OF VOLUME	0.73	AGRICULTURAL	5 %
BOTTOM SLOPE	0.39 %	FOREST OR UNPRODUCTIVE	73 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	22 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

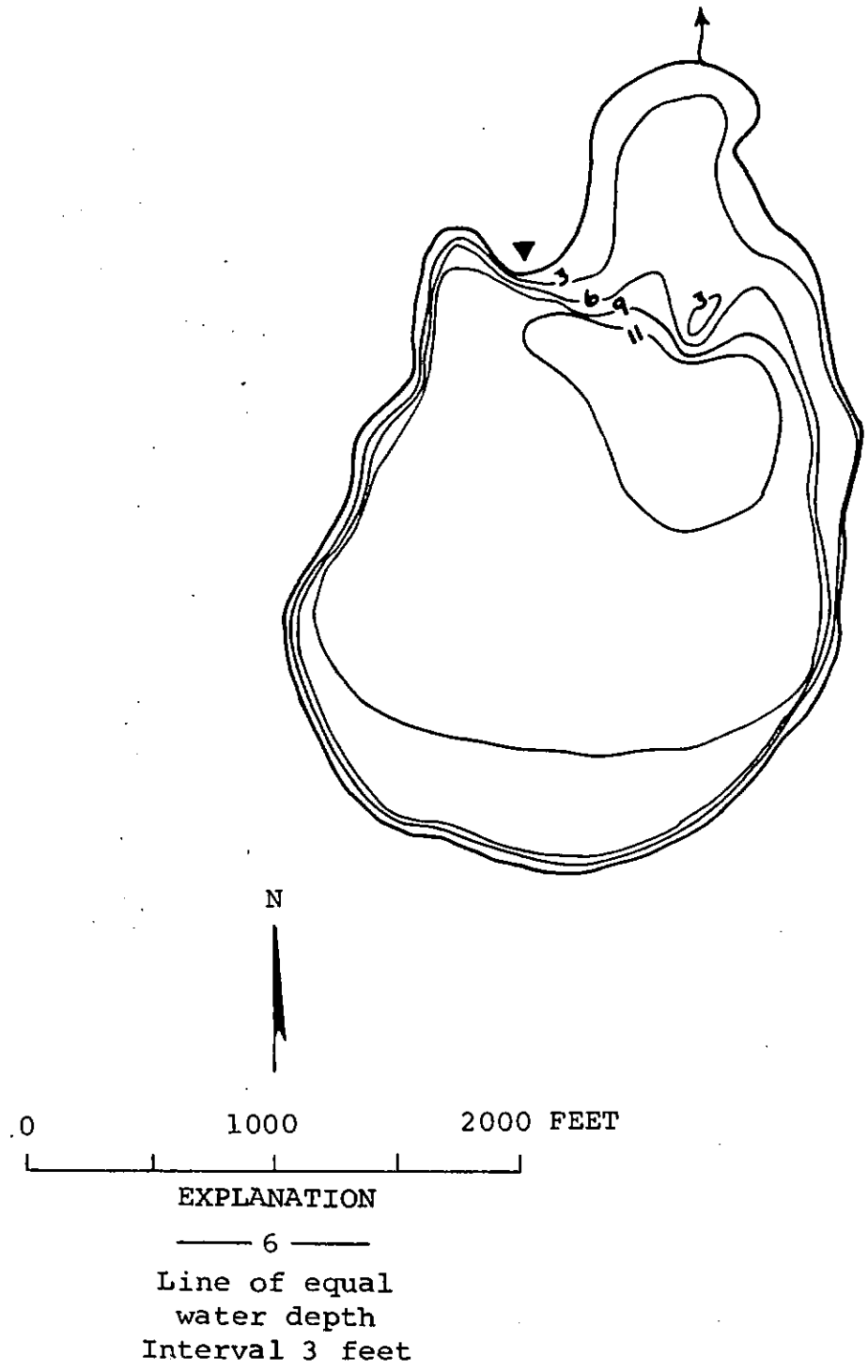
SAMPLE SITE	1	
DATE	8/10/73	
TIME	1440	1445
DEPTH (FT)	3.	7.
TOTAL NITRATE (N)	0.01	0.04
TOTAL NITRITE (N)	0.01	0.01
TOTAL AMMONIA (N)	1.4	1.0
TOTAL ORGANIC NITROGEN (N)	0.80	0.90
TOTAL PHOSPHORUS (P)	0.26	0.21
TOTAL ORTHOPHOSPHATE (P)	0.080	0.076
SPECIFIC CONDUCTANCE (MICROMHOS)	104	104
WATER TEMPERATURE (DEG C)	22.8	21.2
COLOR (PLATINUM-COBALT UNITS)	40	45
SECCHI-DISC VISIBILITY (FT)	5	
DISSOLVED OXYGEN	4.4	1.3

LAKE SHORELINE COVERED BY EMERSED PLANTS	1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/10/73
TIME	1450
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	1
FECAL COLIFORM, MAXIMUM (COL./100ML)	2
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

TREES AND SHRUBS OVERHANG THE EDGE OF THE WATER. AN ALGAL BLOOM WAS OBSERVED.



Bay Lake, Pierce County. From Washington Department of Game, September 16, 1948.

Bay Lake, Pierce County. May 24, 1970. Approx. scale 1:12,000.

BONNEY LAKE PIERCE COUNTY

LATITUDE 47*11'23" LONGITUDE 122*10'57" T20N-R5E-28
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.22 SQ MI	RESIDENTIAL DEVELOPMENT	84 %
ALTITUDE	605. FT		
LAKE AREA	17. ACRES	NUMBER OF NEARSHORE HOMES	16
LAKE VOLUME	160. ACRE-FT		
MEAN DEPTH	10. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	19. FT		
SHORELINE LENGTH	0.74 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.3	RESIDENTIAL SUBURBAN	8 %
DEVELOPMENT OF VOLUME	0.52	AGRICULTURAL	4 %
BOTTOM SLOPE	2.0 %	FOREST OR UNPRODUCTIVE	76 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	12 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

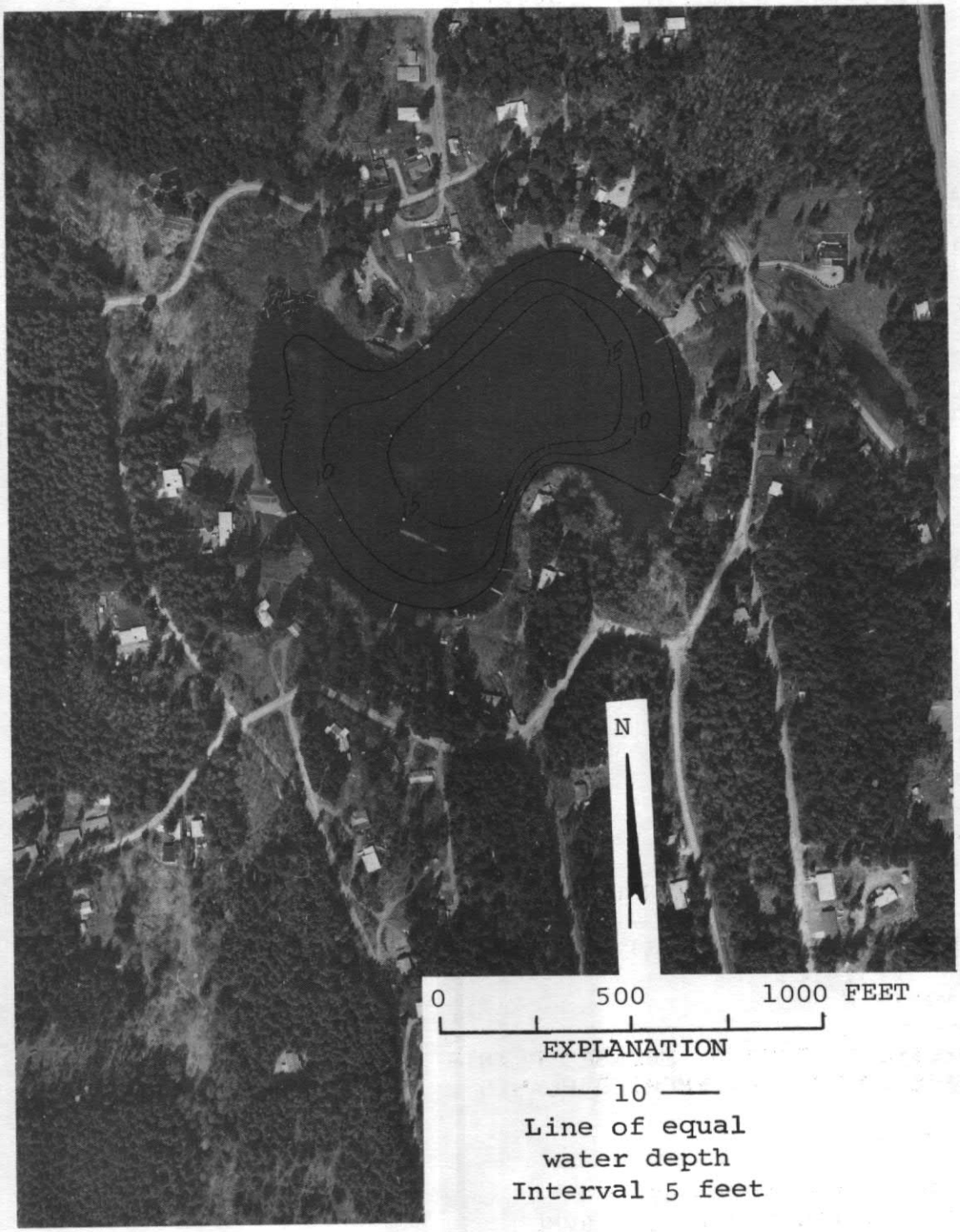
SAMPLE SITE	1	
DATE	8/ 9/73	
TIME	1515	1520
DEPTH (FT)	3.	14.
TOTAL NITRATE (N)	0.00	0.02
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.06	0.24
TOTAL ORGANIC NITROGEN (N)	0.38	0.26
TOTAL PHOSPHORUS (P)	0.015	0.044
TOTAL ORTHOPHOSPHATE (P)	0.005	0.014
SPECIFIC CONDUCTANCE (MICROMHOS)	49	59
WATER TEMPERATURE (DEG C)	22.8	18.9
COLOR (PLATINUM-COBALT UNITS)	15	65
SECCHI-DISC VISIBILITY (FT)	11	
DISSOLVED OXYGEN	8.0	0.5

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

DATE	8/ 9/73
TIME	1520
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	1
FECAL COLIFORM, MAXIMUM (COL./100ML)	11
FECAL COLIFORM, MEAN (COL./100ML)	6

REMARKS

EMERSED AQUATIC PLANTS COVERED THE LAKE IN SCATTERED DENSE PATCHES AND SUBMERSED AQUATIC PLANTS (ELODEA) COVERED MUCH OF THE LAKE BOTTOM.



Bonney Lake, Pierce County. Bathymetric map from U.S. Geological Survey, June 18, 1973. Aerial photo, April 3, 1973.

BOWMAN LAKE PIERCE COUNTY

LATITUDE 47*15'15" LONGITUDE 122*10'16" T20N-R5E-4
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.32 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	470. FT		
LAKE AREA	14. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	55. ACRE-FT		
MEAN DEPTH	4. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	9. FT		
SHORELINE LENGTH	1.0 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.9	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.45	AGRICULTURAL	0 %
BOTTOM SLOPE	1.0 %	FOREST OR UNPRODUCTIVE	91 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	9 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

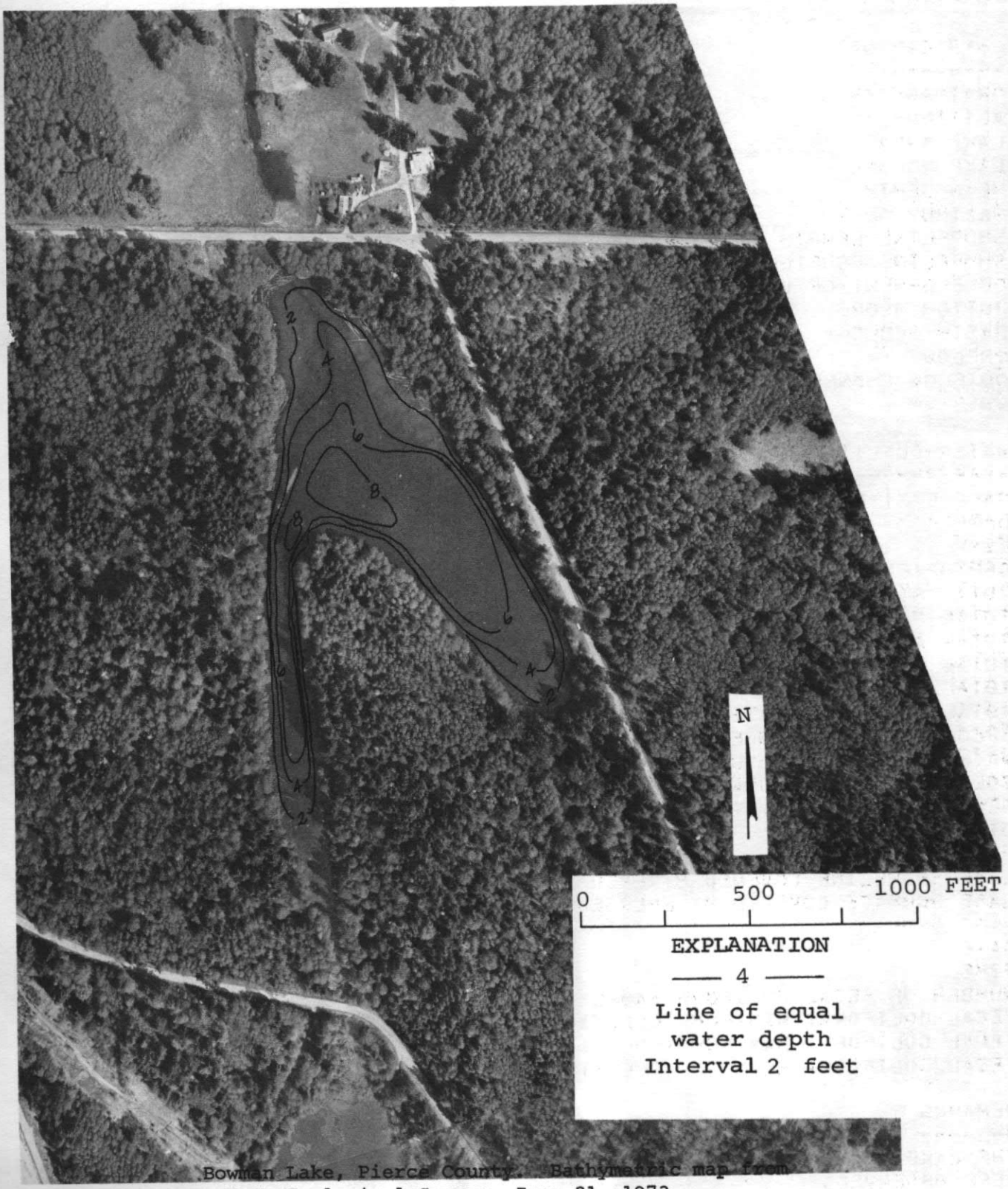
SAMPLE SITE	1	
DATE	8/ 9/73	
TIME	1600	1610
DEPTH (FT)	3.	6.
TOTAL NITRATE (N)	0.01	--
TOTAL NITRITE (N)	0.00	--
TOTAL AMMONIA (N)	0.04	--
TOTAL ORGANIC NITROGEN (N)	0.12	--
TOTAL PHOSPHORUS (P)	0.008	--
TOTAL ORTHOPHOSPHATE (P)	0.004	--
SPECIFIC CONDUCTANCE (MICROMHOS)	51	--
WATER TEMPERATURE (DEG C)	20.8	20.0
COLOR (PLATINUM-COBALT UNITS)	0	--
SECCHI-DISC VISIBILITY (FT)	--	
DISSOLVED OXYGEN	9.2	8.6

LAKE SHORELINE COVERED BY EMERSED PLANTS 1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS NONE OR <1 %

DATE	8/ 9/73
TIME	1610
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

THE LAKE IS FED BY HILLE LAKE. TREES AND SHRUBS OVERHANG THE WATER'S EDGE. SUBMERSED PLANTS COVERED MOST OF LAKE BOTTOM IN SCATTERED PATCHES. THE LITTORAL BOTTOM IS MUCK. LOGS AND WOOD DEBRIS ARE FOUND LOCALLY ALONG THE SHORELINE. A SECCHI-DISC READING WAS NOT RECORDED.



Bowman Lake, Pierce County. Bathymetric map from
U.S. Geological Survey, June 21, 1973.
Aerial photo, April 29, 1973.

CARNEY LAKE PIERCE COUNTY

LATITUDE 47°24' 2" LONGITUDE 122°45'39" T22N-R1W-14
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.46 SQ MI	RESIDENTIAL DEVELOPMENT	90 %
ALTITUDE	350. FT		
LAKE AREA	41. ACRES	NUMBER OF NEARSHORE HOMES	18
LAKE VOLUME	500. ACRE-FT		
MEAN DEPTH	12. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	25. FT		
SHORELINE LENGTH	1.1 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.3	RESIDENTIAL SUBURBAN	5 %
DEVELOPMENT OF VOLUME	0.49	AGRICULTURAL	0 %
BOTTOM SLOPE	1.7 %	FOREST OR UNPRODUCTIVE	81 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	14 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1	
DATE	8/10/73	
TIME	1650	1655
DEPTH (FT)	3.	13.
TOTAL NITRATE (N)	0.02	0.14
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.02	0.03
TOTAL ORGANIC NITROGEN (N)	0.08	0.09
TOTAL PHOSPHORUS (P)	0.011	0.007
TOTAL ORTHOPHOSPHATE (P)	0.003	0.003
SPECIFIC CONDUCTANCE (MICROMHOS)	15	15
WATER TEMPERATURE (DEG C)	22.9	22.5
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	15	
DISSOLVED OXYGEN	8.5	8.6

LAKE SHORELINE COVERED BY EMERSED PLANTS LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS NONE OR <1 %

DATE	8/10/73
TIME	1730
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

THE LAKE LIES IN KITSAP AND PIERCE COUNTIES. VERY FEW AQUATIC MACROPHYTES WERE OBSERVED.

Carney Lake, Pierce County. Bathymetric map from
U.S. Geological Survey, June 22, 1973.
Aerial photo, April 3, 1973.

CEDAR LAKE PIERCE COUNTY

LATITUDE 47° 4'17" LONGITUDE 121°50'22" T18N-R8E-6
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.36 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	4200. FT		
LAKE AREA	28. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	710. ACRE-FT		
MEAN DEPTH	26. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	76. FT		
SHORELINE LENGTH	1.0 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.4	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.34	AGRICULTURAL	0 %
BOTTOM SLOPE	6.1 %	FOREST OR UNPRODUCTIVE	88 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	12 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

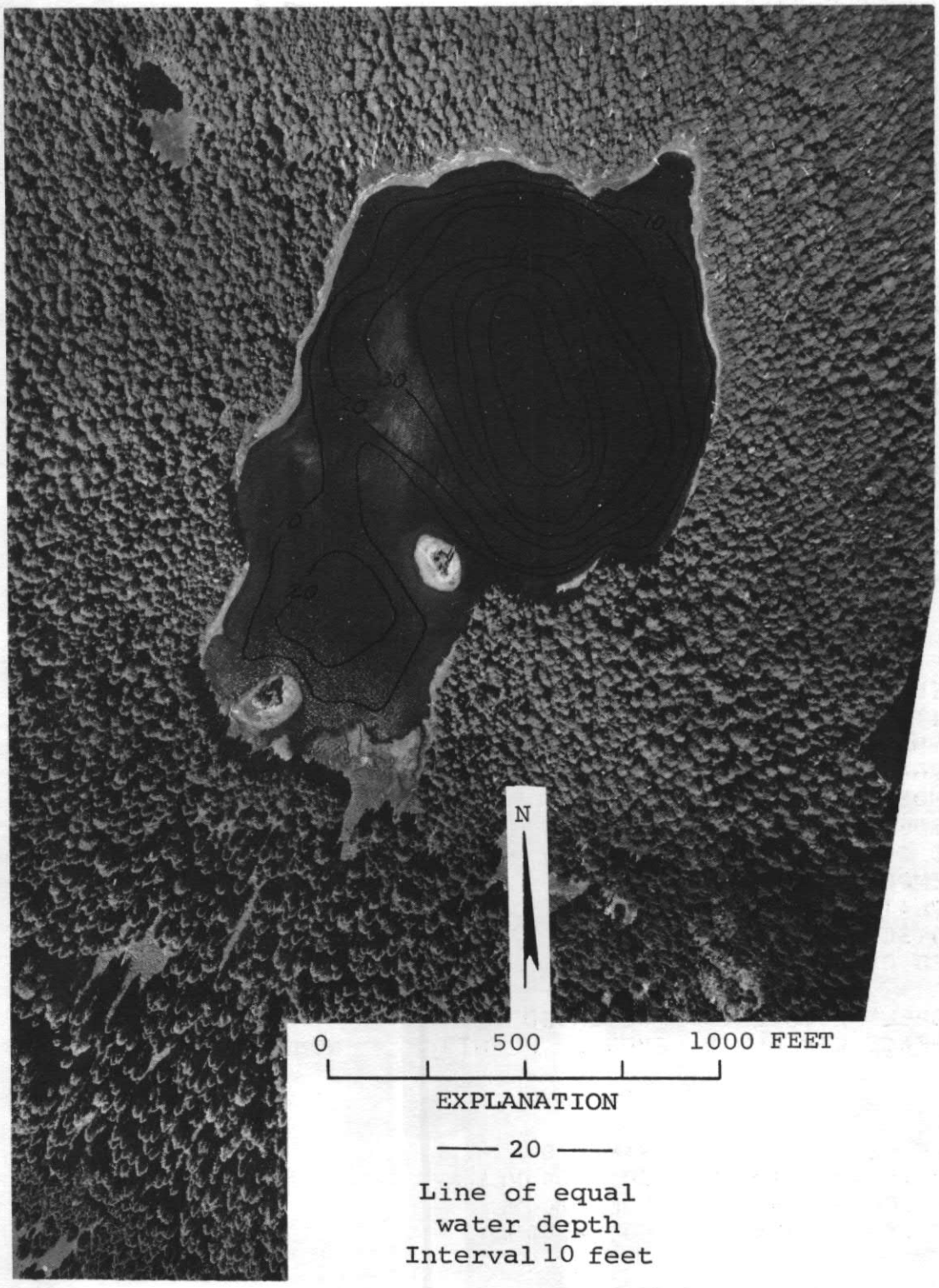
SAMPLE SITE	1	
DATE	7/17/73	
TIME	950	1000
DEPTH (FT)	3.	56.
TOTAL NITRATE (N)	0.02	0.02
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.03	0.03
TOTAL ORGANIC NITROGEN (N)	0.04	0.04
TOTAL PHOSPHORUS (P)	0.002	0.002
TOTAL ORTHOPHOSPHATE (P)	0.002	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	24	24
WATER TEMPERATURE (DEG C)	18.5	4.3
COLOR (PLATINUM-COBALT UNITS)	5	5
SECCHI-DISC VISIBILITY (FT)	28	
DISSOLVED OXYGEN	8.4	6.8

LAKE SHORELINE COVERED BY EMERSED PLANTS	1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	7/17/73
TIME	1030
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

A FEW THINLY SCATTERED EMERSED AND SUBMERSED PLANTS WERE OBSERVED.



Cedar Lake, Pierce County. Bathymetric map from U.S. Geological Survey, September 2, 1973. Aerial photo, July 14, 1973.

CLEAR LAKE PIERCE COUNTY

LATITUDE 46*55'33" LONGITUDE 122*16'34" T17N-R4E-27
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.41 SQ MI	RESIDENTIAL DEVELOPMENT	84 %
ALTITUDE	778. FT		
LAKE AREA	160. ACRES	NUMBER OF NEARSHORE HOMES	122
LAKE VOLUME	6100. ACRE-FT		
MEAN DEPTH	38. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	85. FT		
SHORELINE LENGTH	2.1 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	17 %
DEVELOPMENT OF VOLUME	0.45	AGRICULTURAL	0 %
BOTTOM SLOPE	2.8 %	FOREST OR UNPRODUCTIVE	34 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	49 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

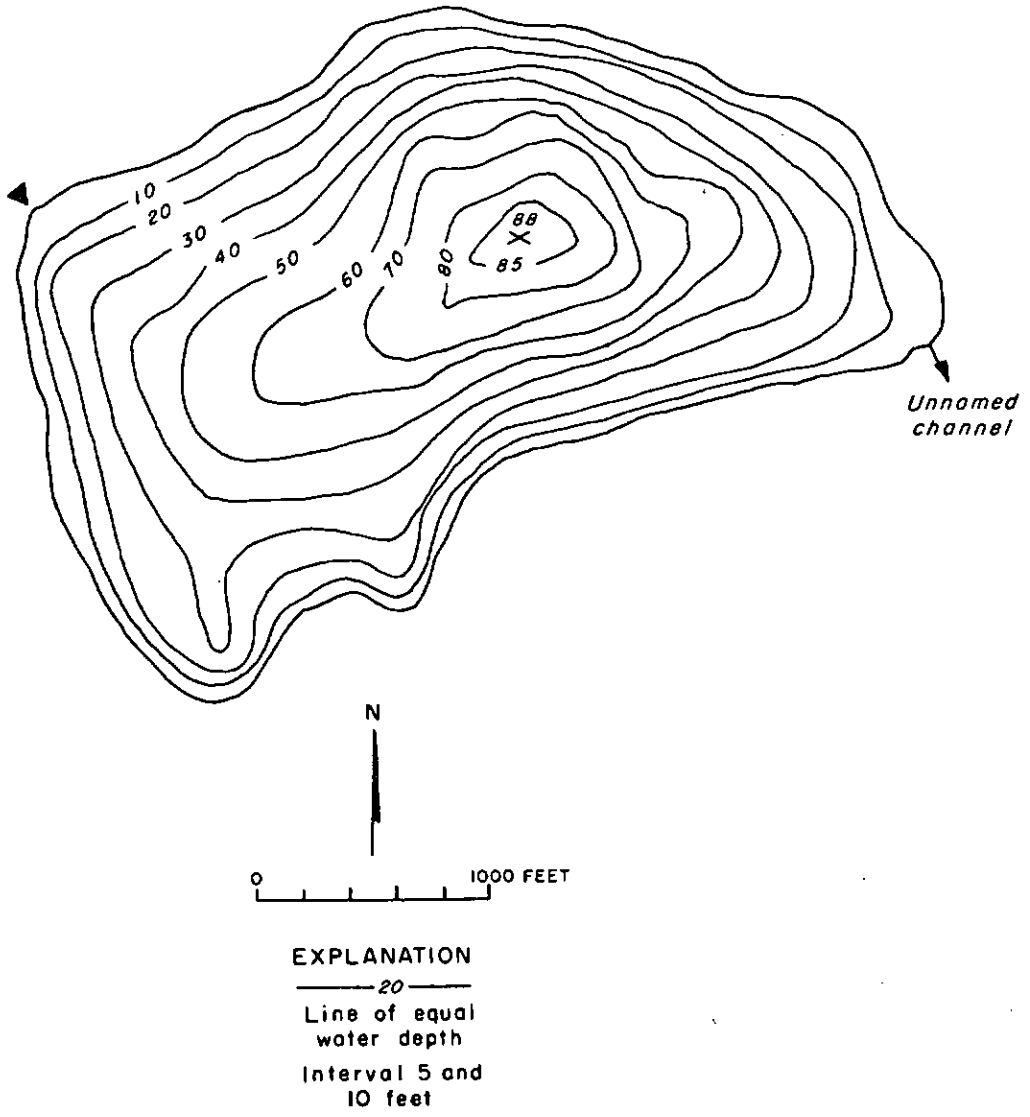
SAMPLE SITE	1	
DATE	10/ 9/70	
TIME	1330	1340
DEPTH (FT)	3.	72.
DISSOLVED NITRATE (N)	0.00	0.04
TOTAL NITRITE (N)	0.00	0.04
TOTAL AMMONIA (N)	0.00	0.07
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.009	0.12
DISSOLVED ORTHOPHOSPHATE (P)	0.000	0.10
SPECIFIC CONDUCTANCE (MICROMHOS)	52	54
WATER TEMPERATURE (DEG C)	14.9	6.0
COLOR (PLATINUM-COBALT UNITS)	0	20
SECCHI-DISC VISIBILITY (FT)	22	
DISSOLVED OXYGEN	9.8	0.2

LAKE SHORELINE COVERED BY EMERSED PLANTS 1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS NONE OR <1 %

DATE	8/26/74
TIME	1200
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	5
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

THE LAKE RECEIVES HEAVY RECREATIONAL USE. THE SAND AND GRAVEL LITTORAL BOTTOM SUPPORTED FEW EMERSED PLANTS, BUT A BAND OF SUBMERSED PLANTS (WATER MILFOIL) SURROUNDED THE LAKESHORE. IN 1970 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE THREE TIMES. THE PLANT SURVEY WAS MADE ON OCTOBER 9, 1970.



Clear Lake, Pierce County. From Washington Department of Game, February 7, 1949.

Clear Lake, Pierce County. July 14, 1971. Approx. scale 1:8000.

COPLAY LAKE PIERCE COUNTY

LATITUDE 47* 1'33" LONGITUDE 121*50' 0" T18N-R8E-30
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.69 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	3880. FT		
LAKE AREA	19. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	490. ACRE-FT		
MEAN DEPTH	26. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	57. FT		
SHORELINE LENGTH	0.82 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.3	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.46	AGRICULTURAL	0 %
BOTTOM SLOPE	5.6 %	FOREST OR UNPRODUCTIVE	98 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	2 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

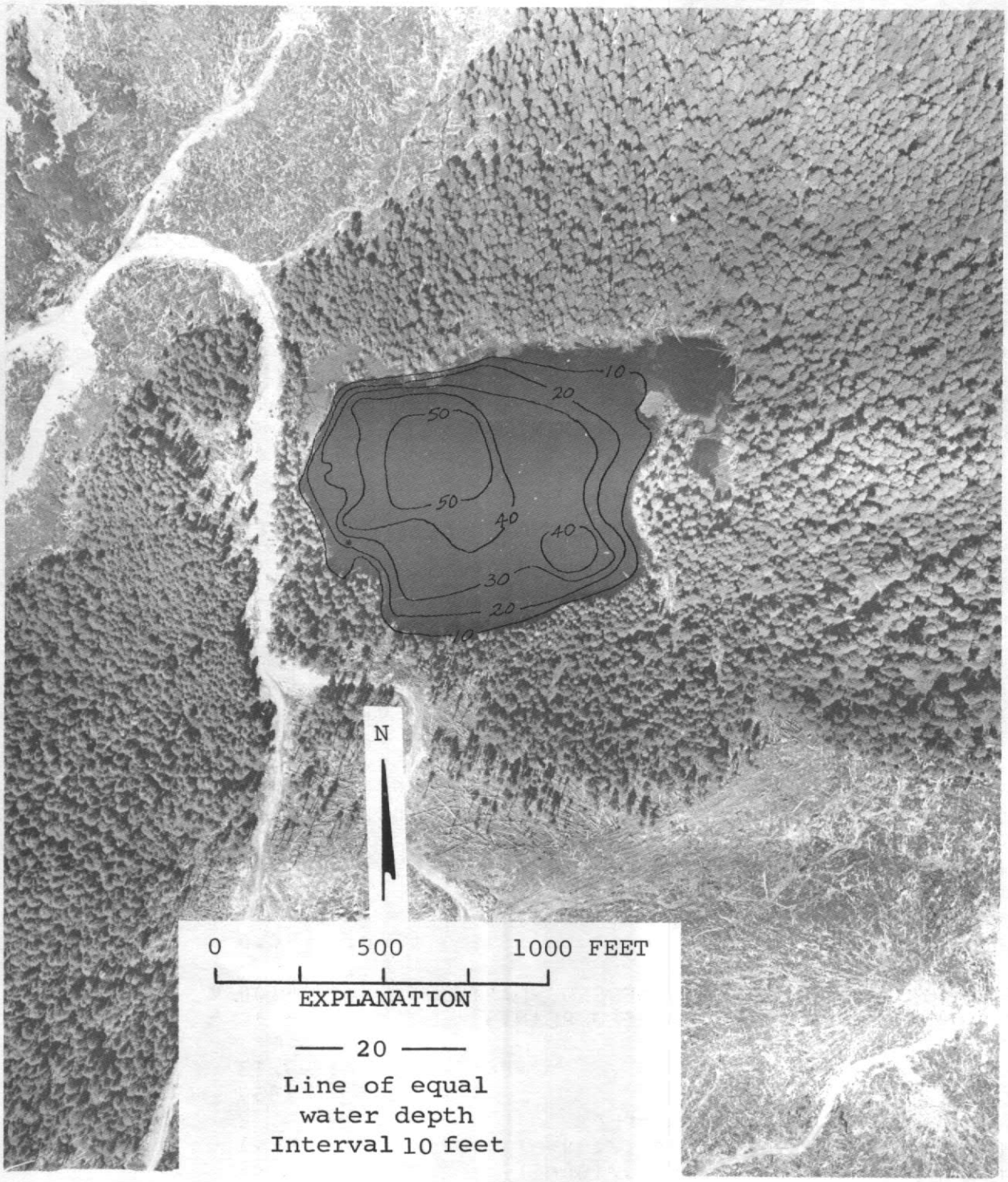
SAMPLE SITE	1	
DATE	8/ 9/73	
TIME	1845	1850
DEPTH (FT)	3.	36.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.30
TOTAL ORGANIC NITROGEN (N)	0.03	0.04
TOTAL PHOSPHORUS (P)	0.006	0.022
TOTAL ORTHOPHOSPHATE (P)	0.003	0.007
SPECIFIC CONDUCTANCE (MICROMHOS)	18	36
WATER TEMPERATURE (DEG C)	17.9	3.9
COLOR (PLATINUM-COBALT UNITS)	15	25
SECCHI-DISC VISIBILITY (FT)	16	
DISSOLVED OXYGEN	8.5	0.3

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/ 9/73
TIME	1850
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

A THIN BAND OF EMERSED PLANTS (HORSETAIL, LILIES, AND GRASSES) COVERED THE SHORELINE. THE LITTORAL BOTTOM IN LOCAL AREAS IS COMPOSED OF MUCK. THE DO WAS NEAR DEPLETION BELOW 25 FEET OF WATER. THE WATER SAMPLE CONTAINED ABUNDANT RED COPEPODS. FLOATING LOGS COVERED THE SHORELINE LOCALLY.



Coplay Lake, Pierce County. Bathymetric map from U.S. Geological Survey, September 2, 1973. Aerial photo, July 14, 1973.

CRANBERRY LAKE PIERCE COUNTY

LATITUDE 46*53'51" LONGITUDE 122*21'46" T16N-R3E-1
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.55 SQ MI	RESIDENTIAL DEVELOPMENT	6 %
ALTITUDE	644. FT		
LAKE AREA	37. ACRES	NUMBER OF NEARSHORE HOMES	2
LAKE VOLUME	430. ACRE-FT		
MEAN DEPTH	12. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	18. FT		
SHORELINE LENGTH	0.86 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.0	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.65	AGRICULTURAL	50 %
BOTTOM SLOPE	1.3 %	FOREST OR UNPRODUCTIVE	40 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	10 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

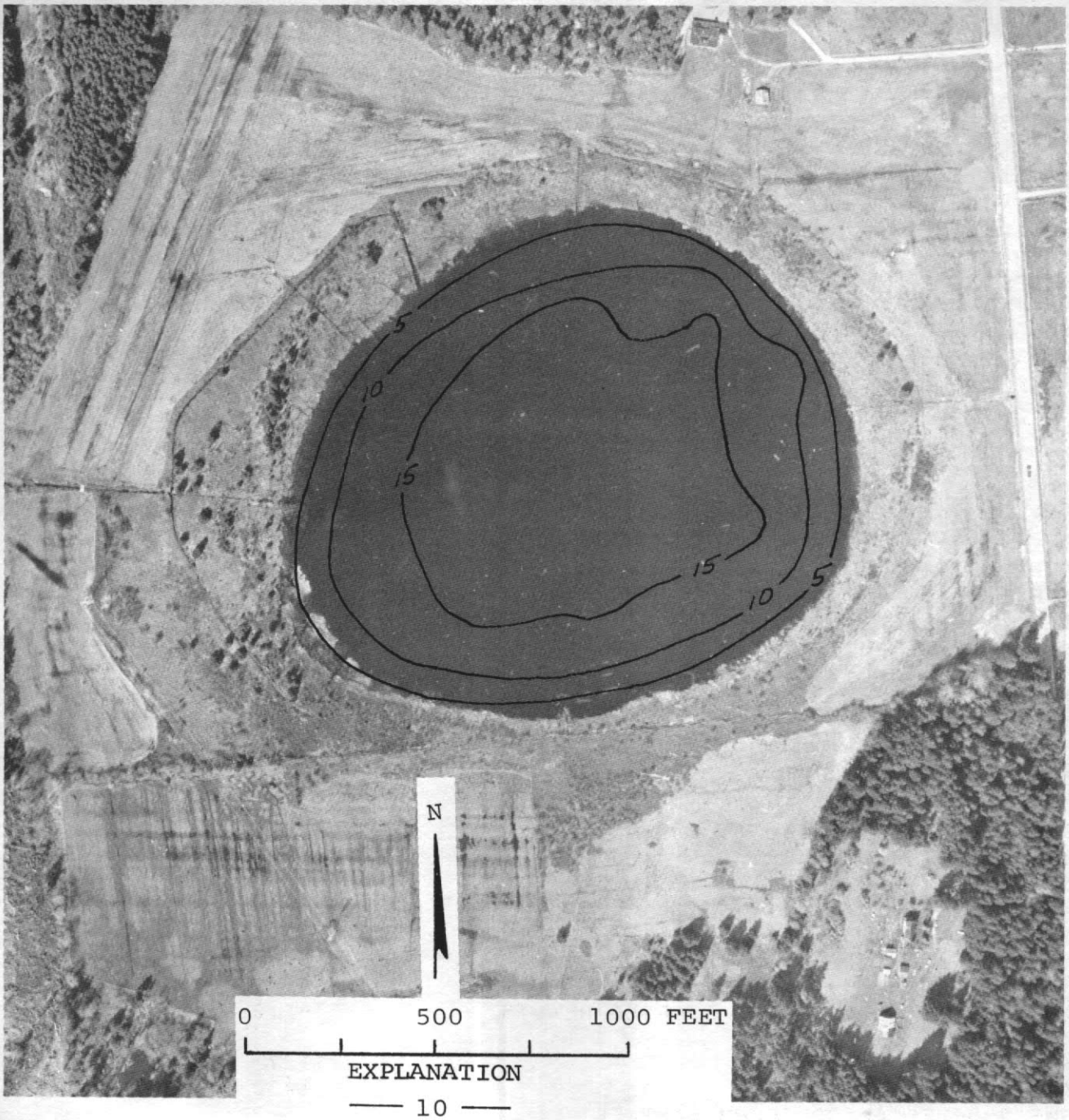
SAMPLE SITE	1	
DATE	8/11/73	
TIME	1425	1430
DEPTH (FT)	3.	11.
TOTAL NITRATE (N)	0.16	0.00
TOTAL NITRITE (N)	0.01	0.01
TOTAL AMMONIA (N)	0.19	0.29
TOTAL ORGANIC NITROGEN (N)	0.81	0.91
TOTAL PHOSPHORUS (P)	0.037	0.040
TOTAL ORTHOPHOSPHATE (P)	0.012	0.020
SPECIFIC CONDUCTANCE (MICROMHOS)	66	72
WATER TEMPERATURE (DEG C)	20.9	12.0
COLOR (PLATINUM-COBALT UNITS)	100	175
SECCHI-DISC VISIBILITY (FT)	3	
DISSOLVED OXYGEN	7.7	0.1

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/11/73
TIME	1430
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

A MARSH AND PEAT BOG SURROUND THE LAKE. THE WATER IS A DARK BROWN COLOR. EMERSED PLANTS COVERED THE SHORELINE IN A NARROW BAND. THE OUTLET HAS BEEN DREDGED.



Cranberry Lake, Pierce County. Bathymetric map from
U.S. Geological Survey, June 14, 1973.
Aerial photo, April 3, 1973.

CRESCENT LAKE PIERCE COUNTY

LATITUDE 47*23'18" LONGITUDE 122*34'19" T22N-R2E-20
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.18 SQ MI	RESIDENTIAL DEVELOPMENT	42 %
ALTITUDE	166. FT		
LAKE AREA	50. ACRES	NUMBER OF NEARSHORE HOMES	33
LAKE VOLUME	780. ACRE-FT		
MEAN DEPTH	16. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	29. FT		
SHORELINE LENGTH	1.4 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.4	RESIDENTIAL SUBURBAN	1 %
DEVELOPMENT OF VOLUME	0.54	AGRICULTURAL	3 %
BOTTOM SLOPE	1.3 %	FOREST OR UNPRODUCTIVE	89 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	7 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

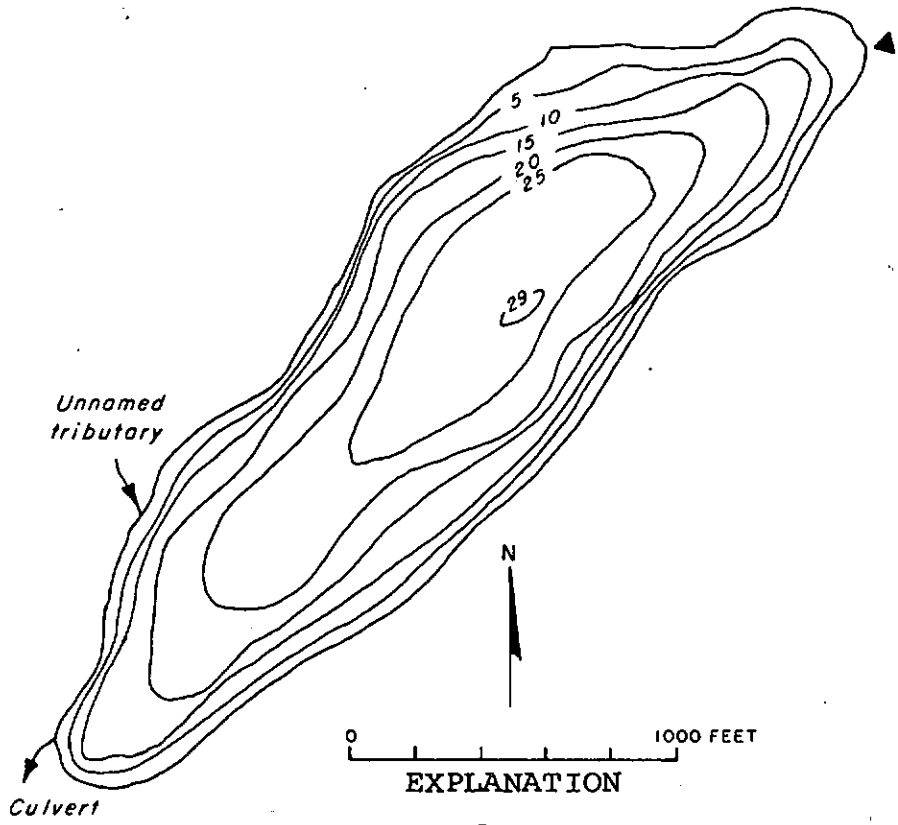
SAMPLE SITE	1	
DATE	10/ 5/70	
TIME	1540	1550
DEPTH (FT)	4.	25.
DISSOLVED NITRATE (N)	0.02	0.04
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.07	0.16
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.013	0.026
DISSOLVED ORTHOPHOSPHATE (P)	0.010	0.013
SPECIFIC CONDUCTANCE (MICROMHOS)	57	75
WATER TEMPERATURE (DEG C)	14.8	13.0
COLOR (PLATINUM-COBALT UNITS)	30	--
SECCHI-DISC VISIBILITY (FT)	5	
DISSOLVED OXYGEN	9.0	0.5

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

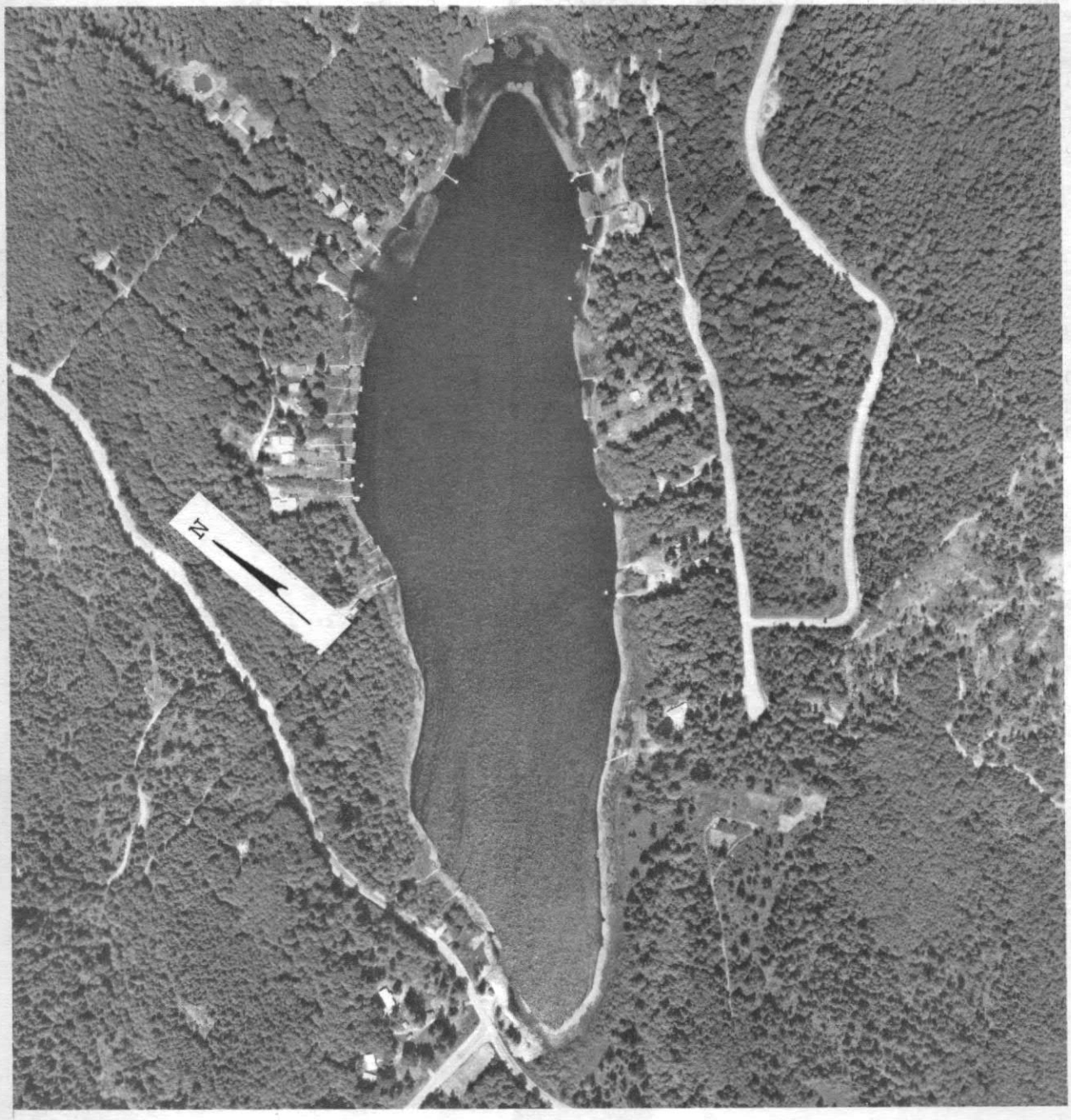
DATE	8/27/74
TIME	1530
NUMBER OF FECAL COLIFORM SAMPLES	7
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	7
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

THE LAKE HAD A HEAVY COVER OF BOTH EMERSED PLANTS (LILIES, WATERSHIELD, AND SEDGES) AND SUBMERSED PLANTS (PONDWEED). THE LITTORAL ZONE OF THE LAKE IS GENERALLY MUCK, SILT, SAND, AND GRAVEL. IN 1970 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE THREE TIMES.



Crescent Lake, Pierce County. From Washington Department of Game, August 19, 1947.



Crescent Lake, Pierce County. July 14, 1971. Approx. scale 1:6200.

ECHO LAKE PIERCE COUNTY

LATITUDE 47* 2'39" LONGITUDE 121*25'19" T18N-R11E-16
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	11.1 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	3819. FT		
LAKE AREA	49. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	1100. ACRE-FT		
MEAN DEPTH	22. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	35. FT		
SHORELINE LENGTH	1.3 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.3	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.63	AGRICULTURAL	0 %
BOTTOM SLOPE	2.1 %	FOREST OR UNPRODUCTIVE	99 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	1 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

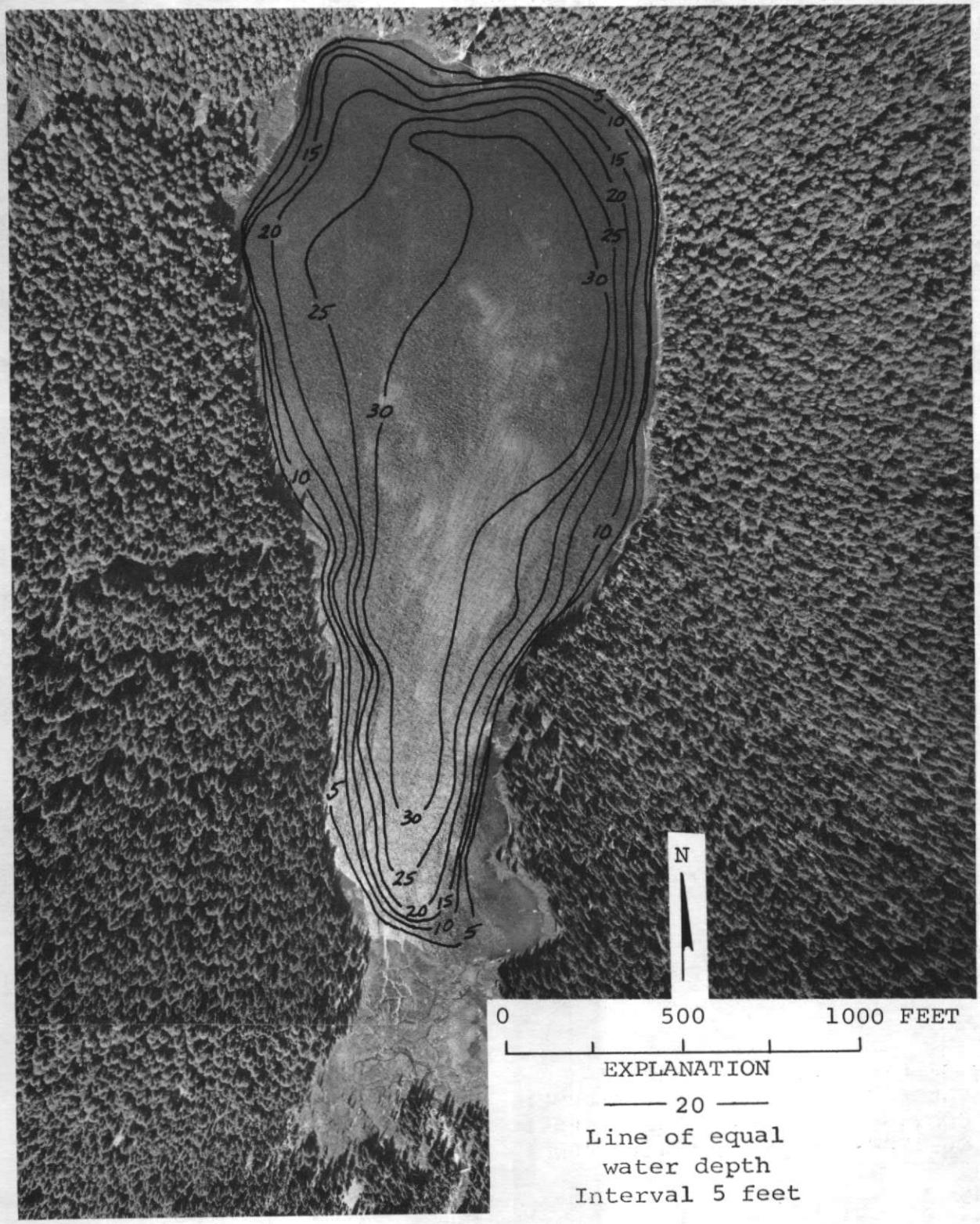
SAMPLE SITE	1	
DATE	8/ 9/73	
TIME	1015	1020
DEPTH (FT)	3.	28.
TOTAL NITRATE (N)	0.01	0.00
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.04	0.08
TOTAL ORGANIC NITROGEN (N)	0.06	0.11
TOTAL PHOSPHORUS (P)	0.012	0.042
TOTAL ORTHOPHOSPHATE (P)	0.007	0.026
SPECIFIC CONDUCTANCE (MICROMHOS)	55	52
WATER TEMPERATURE (DEG C)	15.9	11.3
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	>32	
DISSOLVED OXYGEN	8.7	8.3

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/ 9/73
TIME	1025
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

A THIN BAND OF EMERSED PLANTS COVERED THE SHORELINE AND SUBMERSED PLANTS (PONDWEED) COVERED THE BOTTOM NEAR THE INFLOW AND OUTFLOW. THE WATER SAMPLE CONTAINED ABUNDANT RED COPEPODS. FLOATING AND SUBMERGED LOGS LITTERED THE SHORELINE.



Echo Lake, Pierce County. Bathymetric map from U.S. Geological Survey, August 27, 1973. Aerial photo, August 3, 1973.

FLORENCE LAKE PIERCE COUNTY

LATITUDE 47* 9'57" LONGITUDE 122*41'13" T19N-R1E-4
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.40 SQ MI	RESIDENTIAL DEVELOPMENT	11 %
ALTITUDE	197. FT		
LAKE AREA	67. ACRES	NUMBER OF NEARSHORE HOMES	6
LAKE VOLUME	1300. ACRE-FT		
MEAN DEPTH	19. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	31. FT		
SHORELINE LENGTH	2.0 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.8	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.62	AGRICULTURAL	0 %
BOTTOM SLOPE	1.6 %	FOREST OR UNPRODUCTIVE	74 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	26 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1	
DATE	8/21/74	
TIME	1130	1135
DEPTH (FT)	3.	23.
TOTAL NITRATE (N)	0.02	0.02
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.05
TOTAL ORGANIC NITROGEN (N)	0.48	0.47
TOTAL PHOSPHORUS (P)	0.010	0.011
TOTAL ORTHOPHOSPHATE (P)	0.004	0.004
SPECIFIC CONDUCTANCE (MICROMHOS)	40	40
WATER TEMPERATURE (DEG C)	20.1	19.9
COLOR (PLATINUM-COBALT UNITS)	5	5
SECCHI-DISC VISIBILITY (FT)	12	
DISSOLVED OXYGEN	8.2	8.0

LAKE SHORELINE COVERED BY EMERSED PLANTS	1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/21/74
TIME	1200
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	1
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

THE LAKE IS ON ANDERSON ISLAND. TREES AND SHRUBS OVERHANG THE SHORE. AQUATIC MACROPHYTES WERE SPARSE. THE DO WAS NEAR SATURATION THROUGHOUT THE ENTIRE WATER COLUMN. LOGS AND WOOD DEBRIS COVERED THE SHORELINE.

Florence Lake, Pierce County. Bathymetric map from U.S. Geological Survey, February 7, 1974. Aerial photo, May 24, 1970.

FOREST LAKE PIERCE COUNTY

LATITUDE 47* 2'54" LONGITUDE 122*11'29" T18N-R5E-17
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.46 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	530. FT		
LAKE AREA	6. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	77. ACRE-FT		
MEAN DEPTH	12. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	38. FT		
SHORELINE LENGTH	0.49 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.4	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.36	AGRICULTURAL	9 %
BOTTOM SLOPE	5.8 %	FOREST OR UNPRODUCTIVE	89 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	2 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

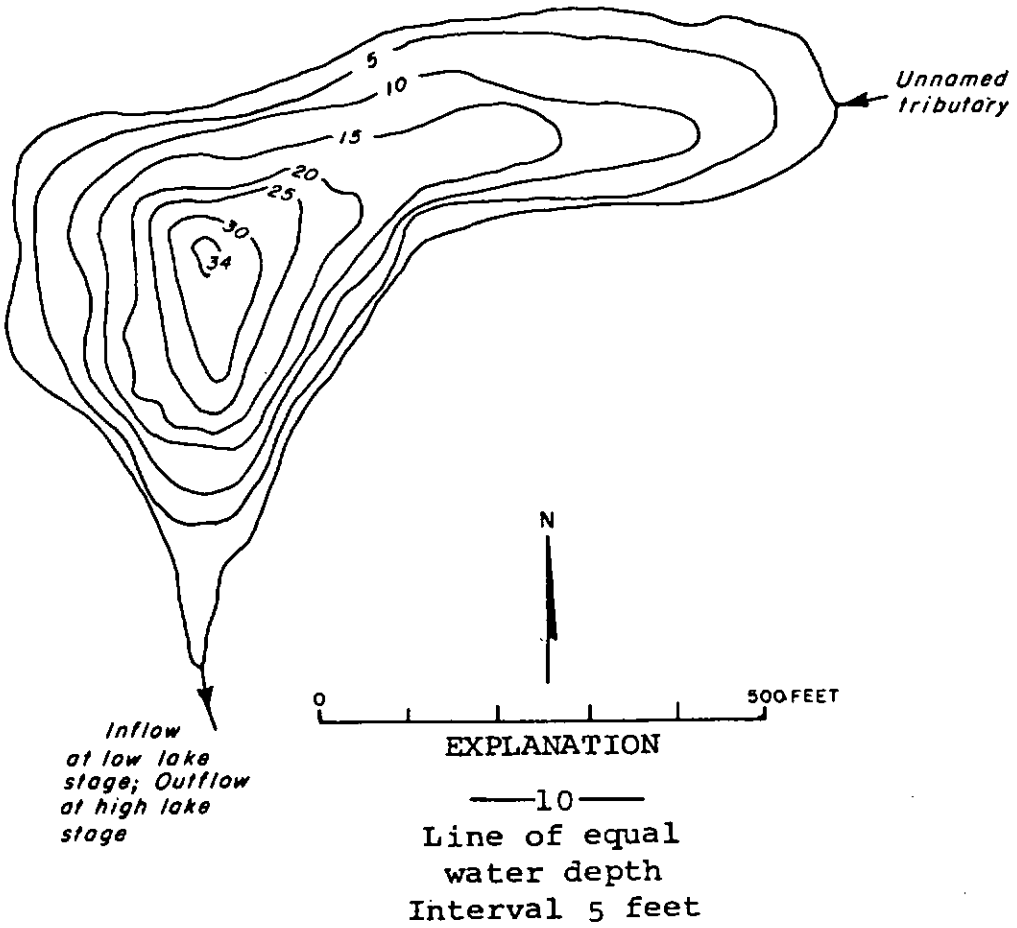
SAMPLE SITE	1	
DATE	10/ 9/70	
TIME	1020	1030
DEPTH (FT)	3.	27.
DISSOLVED NITRATE (N)	0.20	0.20
DISSOLVED NITRITE (N)	0.01	0.00
TOTAL AMMONIA (N)	0.10	0.32
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.016	0.049
DISSOLVED ORTHOPHOSPHATE (P)	0.016	0.049
SPECIFIC CONDUCTANCE (MICROMHOS)	85	130
WATER TEMPERATURE (DEG C)	12.0	5.1
COLOR (PLATINUM-COBALT UNITS)	20	50
SECCHI-DISC VISIBILITY (FT)	8	
DISSOLVED OXYGEN	6.6	0.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

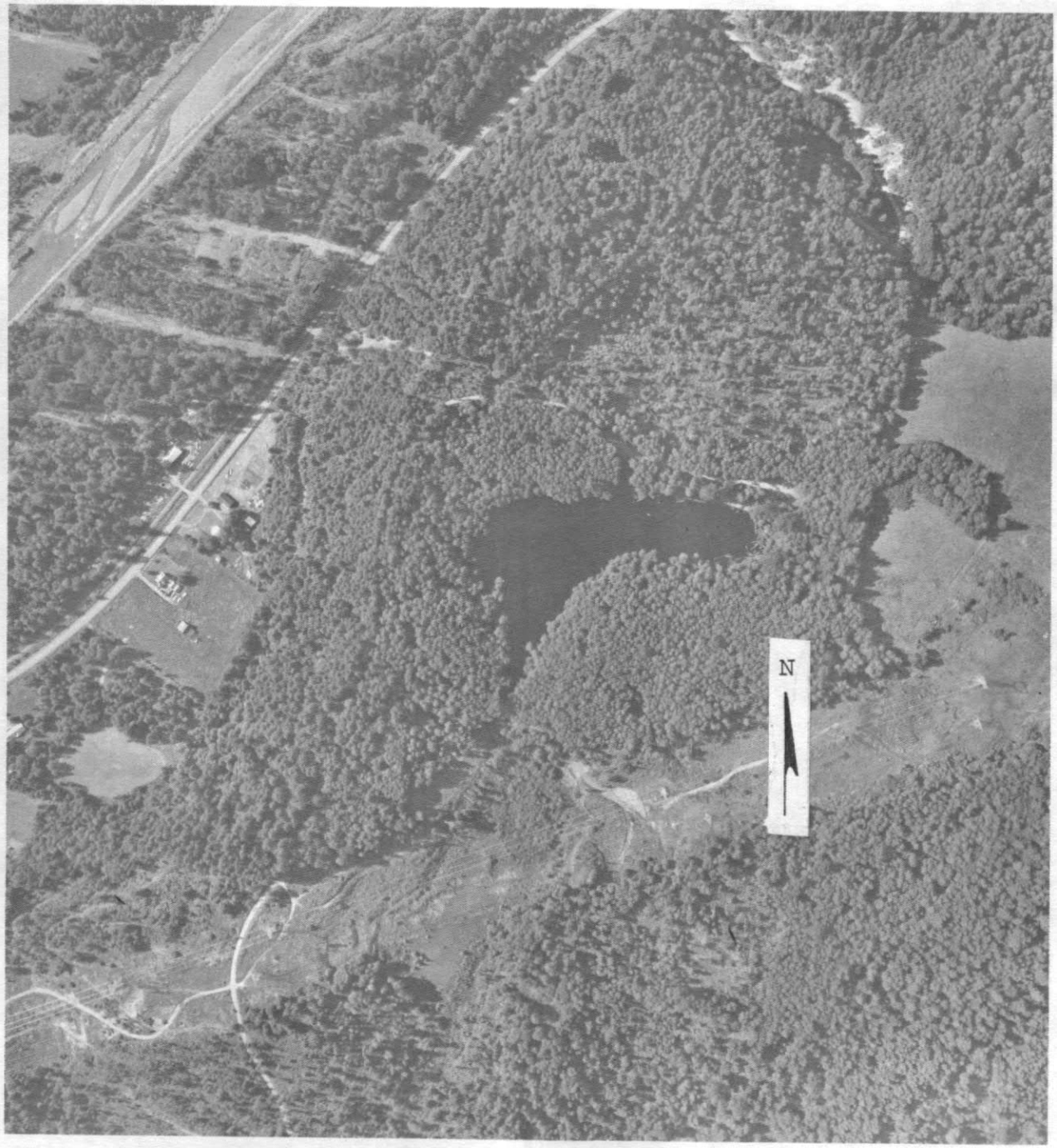
DATE	0/ 0/ 0
TIME	0
NUMBER OF FECAL COLIFORM SAMPLES	0
FECAL COLIFORM, MINIMUM (COL./100ML)	--
FECAL COLIFORM, MAXIMUM (COL./100ML)	--
FECAL COLIFORM, MEAN (COL./100ML)	--

REMARKS

THE LAKE IS IN A CONICAL-SHAPED DEPRESSION AND IS PROTECTED FROM THE WIND BY A HEAVY FOREST COVER. THE LITTORAL ZONE (SOFT MUCK) IS COVERED WITH FALLEN LOGS AND ORGANIC DEBRIS. THE MACROPHYTES WERE SPARSE. HYDROGEN SULFIDE WAS DETECTED IN THE HYPOLIMNION. IN 1970 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE THREE TIMES. THE PLANT SURVEY WAS MADE ON OCTOBER 9, 1970.



Forest Lake, Pierce County. From Washington Department of Game, August 17, 1947.



Forest Lake, Pierce County. July 14, 1971. Approx. scale 1:6600.

GRAVELLY LAKE PIERCE COUNTY

LATITUDE 47° 8'32" LONGITUDE 122°31'45" T19N-R2E-10
CHAMBERS CREEK BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.66 SQ MI	RESIDENTIAL DEVELOPMENT	100 %
ALTITUDE	220. FT		
LAKE AREA	160. ACRES	NUMBER OF NEARSHORE HOMES	91
LAKE VOLUME	6000. ACRE-FT		
MEAN DEPTH	38. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	55. FT		
SHORELINE LENGTH	2.1 MI	RESIDENTIAL URBAN	40 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	22 %
DEVELOPMENT OF VOLUME	0.68	AGRICULTURAL	0 %
BOTTOM SLOPE	1.8 %	FOREST OR UNPRODUCTIVE	0 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	38 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

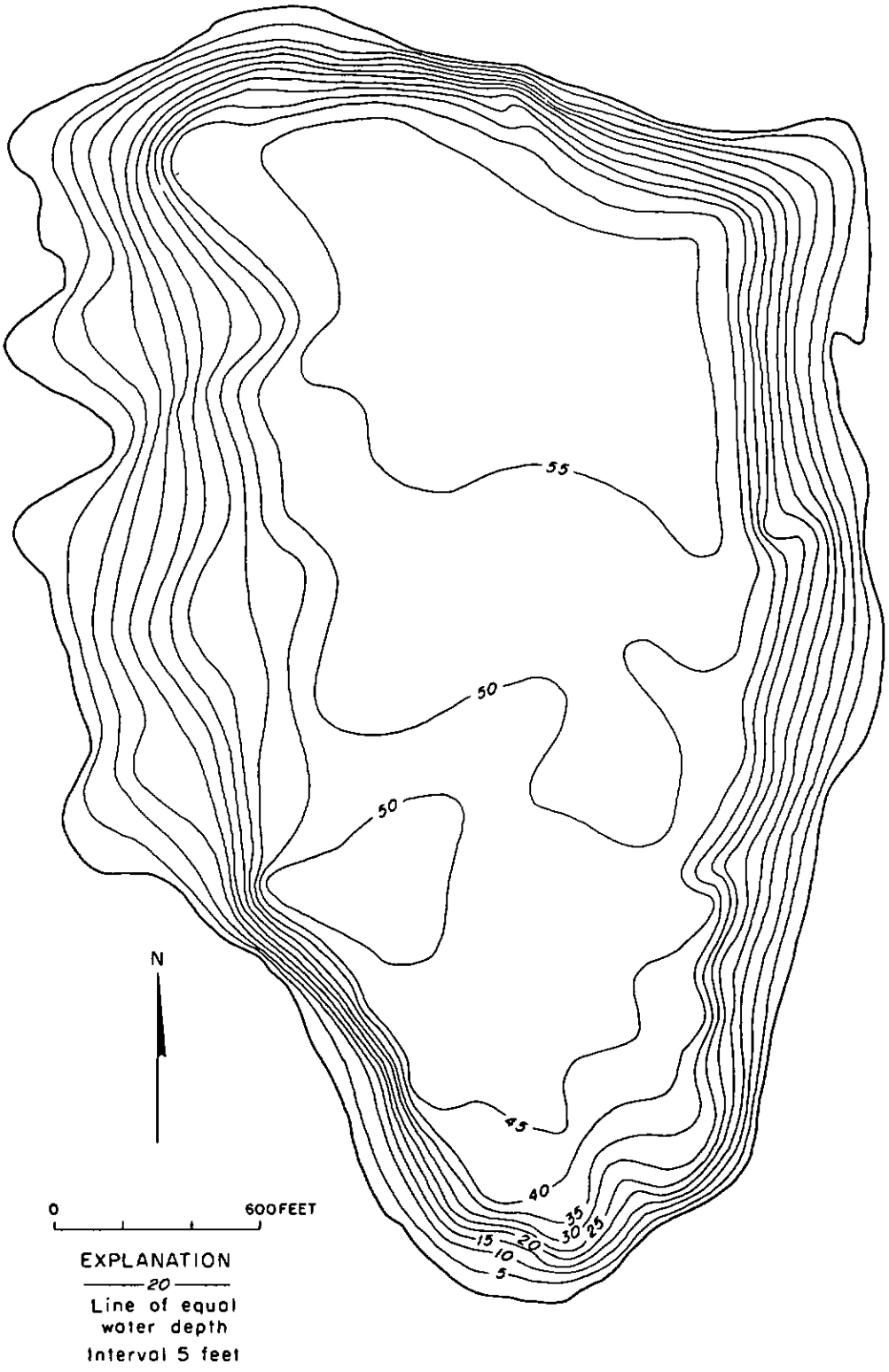
SAMPLE SITE	1	
DATE	10/ 8/70	
TIME	1510	1520
DEPTH (FT)	3.	49.
DISSOLVED NITRATE (N)	0.40	2.7
DISSOLVED NITRITE (N)	0.02	0.00
TOTAL AMMONIA (N)	0.11	3.1
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.026	0.78
DISSOLVED ORTHOPHOSPHATE (P)	0.026	0.78
SPECIFIC CONDUCTANCE (MICROMHOS)	138	177
WATER TEMPERATURE (DEG C)	15.0	9.2
COLOR (PLATINUM-COBALT UNITS)	0	5
SECCHI-DISC VISIBILITY (FT)	35	
DISSOLVED OXYGEN	9.2	0.1

LAKE SHORELINE COVERED BY EMERSED PLANTS LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS NONE OR <1 %

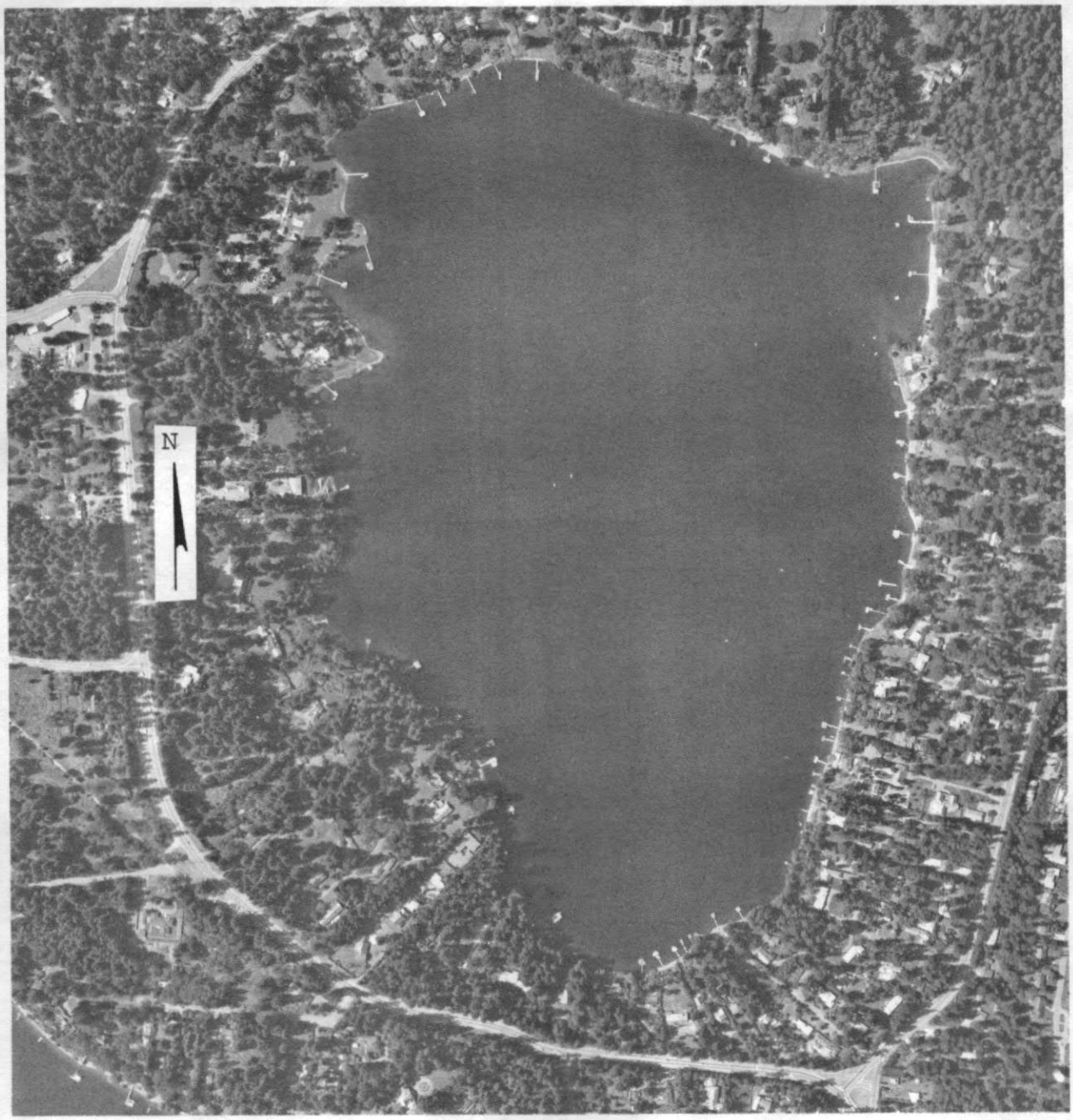
DATE	8/21/74
TIME	1340
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

AN URBAN LAKE LOCATED SOUTH OF TACOMA. THE GRAVEL LITTORAL ZONE OF THE LAKE SUPPORTED VERY FEW MACROPHYTES. HOWEVER, THE LAKE HAS BEEN TREATED WITH ALGACIDES AND HERBICIDES. IN 1970 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE THREE TIMES. THE PLANT SURVEY WAS MADE ON OCTOBER 8, 1970.



Gravelly Lake, Pierce County. From U.S. Geological Survey, July 1970.



Gravelly Lake, Pierce County. July 14, 1971. Approx. scale 1:8400.

GREENWATER, UPPER LAKE PIERCE COUNTY

LATITUDE 47* 5' 9" LONGITUDE 121*26'42" T19N-R11E-31
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	27.5 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	2846. FT		
LAKE AREA	5. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME (EST.)	44. ACRE-FT		
MEAN DEPTH (EST.)	9. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	16. FT		
SHORELINE LENGTH	0.57 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.8	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.55	AGRICULTURAL	0 %
BOTTOM SLOPE	3.0 %	FOREST OR UNPRODUCTIVE	100 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	<1 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1	
DATE	8/ 9/73	
TIME	1155	1200
DEPTH (FT)	3.	12.
TOTAL NITRATE (N)	0.07	0.07
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.01	0.01
TOTAL ORGANIC NITROGEN (N)	0.02	0.00
TOTAL PHOSPHORUS (P)	0.030	0.032
TOTAL ORTHOPHOSPHATE (P)	0.030	0.032
SPECIFIC CONDUCTANCE (MICROMHOS)	64	64
WATER TEMPERATURE (DEG C)	10.2	10.0
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	>16	
DISSOLVED OXYGEN	9.6	9.8

LAKE SHORELINE COVERED BY EMERSED PLANTS	11- 25 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/ 9/73
TIME	1230
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

THE LAKE IS A SMALL POOL IN THE CHANNEL OF THE GREENWATER RIVER. THUS, THE FLUSHING RATE FOR THE LAKE WOULD BE VERY HIGH. LOGS AND WOOD DEBRIS CHOKE THE OUTLET CHANNEL.

Greenwater, Upper Lake, Pierce County.
July 14, 1973. Approx. scale 1:4800.

HARTS LAKE PIERCE COUNTY

LATITUDE 46*53'32" LONGITUDE 122*28'18" T16N-R3E-7
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	3.57 SQ MI	RESIDENTIAL DEVELOPMENT	10 %
ALTITUDE	347. FT		
LAKE AREA	120. ACRES	NUMBER OF NEARSHORE HOMES	6
LAKE VOLUME	3100. ACRE-FT		
MEAN DEPTH	26. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	50. FT		
SHORELINE LENGTH	1.6 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.0	RESIDENTIAL SUBURBAN	<1 %
DEVELOPMENT OF VOLUME	0.52	AGRICULTURAL	20 %
BOTTOM SLOPE	5.5 %	FOREST OR UNPRODUCTIVE	74 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	6 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

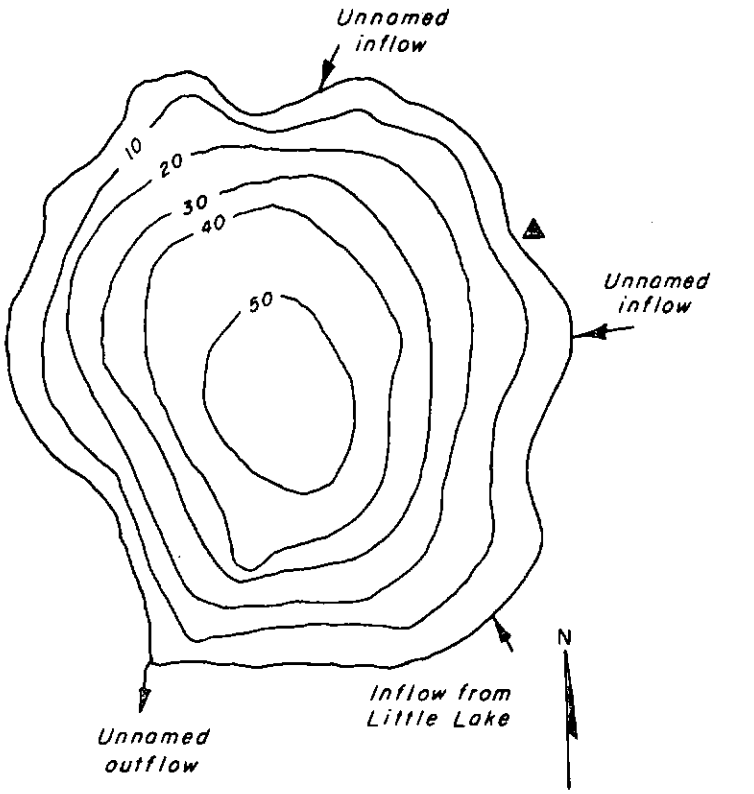
SAMPLE SITE	1	
DATE	8/13/71	
TIME	1130	1135
DEPTH (FT)	3.	39.
DISSOLVED NITRATE (N)	0.02	0.05
TOTAL NITRITE (N)	--	--
TOTAL AMMONIA (N)	0.12	0.75
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.030	0.52
DISSOLVED ORTHOPHOSPHATE (P)	0.010	0.49
SPECIFIC CONDUCTANCE (MICROMHOS)	115	155
WATER TEMPERATURE (DEG C)	24.9	6.5
COLOR (PLATINUM-COBALT UNITS)	30	75
SECCHI-DISC VISIBILITY (FT)	11	
DISSOLVED OXYGEN	6.6	0.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	51- 76 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

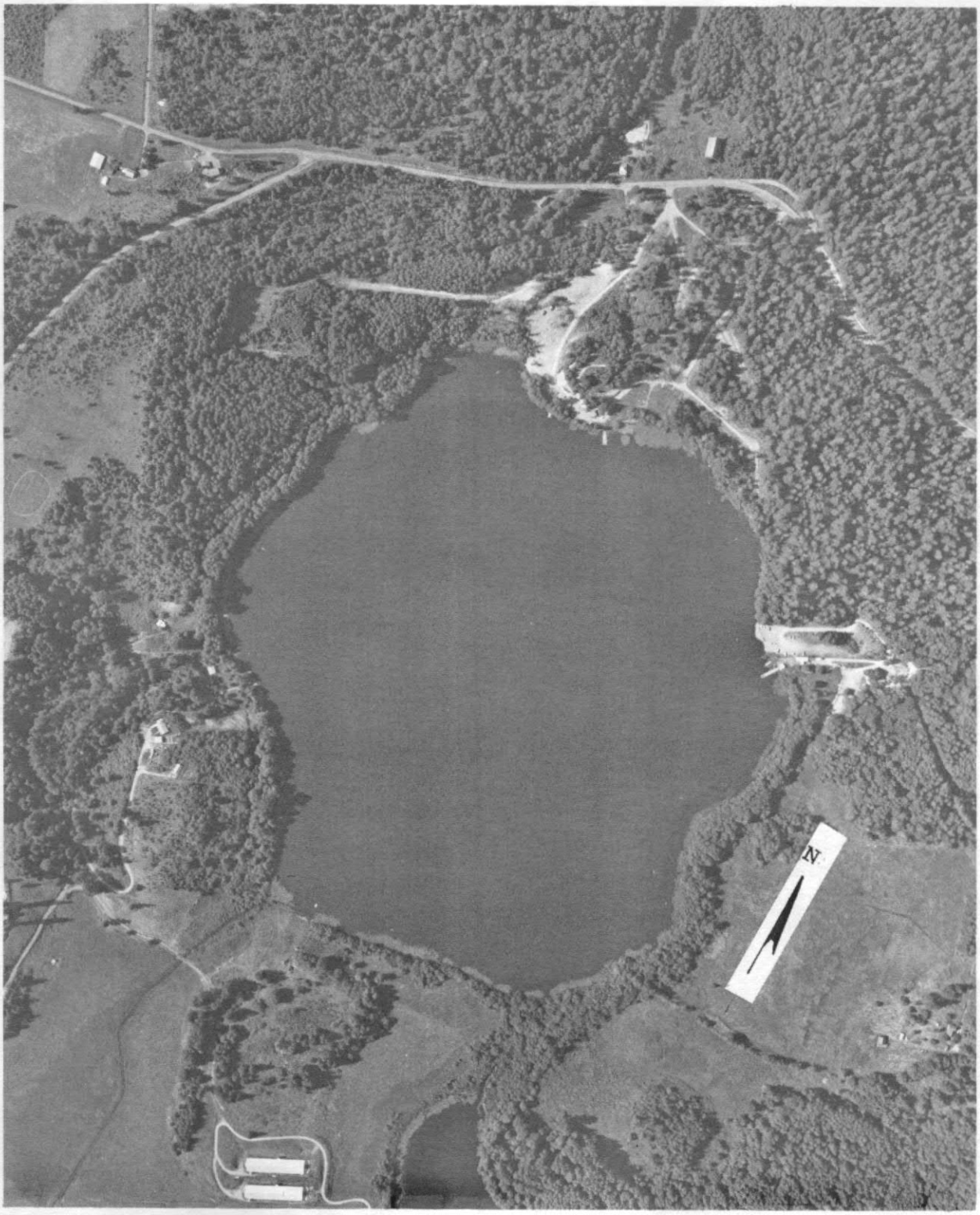
DATE	8/26/74
TIME	1100
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	3
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

EMERSED AQUATIC MACROPHYTES COVERED MOST OF THE SHORELINE. THE LITTORAL ZONE IS COMPOSED OF SILT, MUCK, AND SOME LOCAL PATCHES OF GRAVEL. HYDROGEN SULFIDE WAS DETECTED IN THE HYPOLIMNION. IN 1971 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE SIX TIMES. THE PLANT SURVEY WAS MADE ON AUGUST 13, 1971.



Harts Lake, Pierce County. From Washington Department of Game, June 1, 1953.



Harts Lake, Pierce County. July 14, 1971. Approx. scale 1:8200.

JACKSON LAKE PIERCE COUNTY

LATITUDE 47°17'10" LONGITUDE 122°46'19" T21N-R1W-23
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.32 SQ MI	RESIDENTIAL DEVELOPMENT	50 %
ALTITUDE	196. FT		
LAKE AREA	17. ACRES	NUMBER OF NEARSHORE HOMES	27
LAKE VOLUME	260. ACRE-FT		
MEAN DEPTH	15. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	30. FT		
SHORELINE LENGTH	0.67 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	3 %
DEVELOPMENT OF VOLUME	0.51	AGRICULTURAL	2 %
BOTTOM SLOPE	3.1 %	FOREST OR UNPRODUCTIVE	87 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	8 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

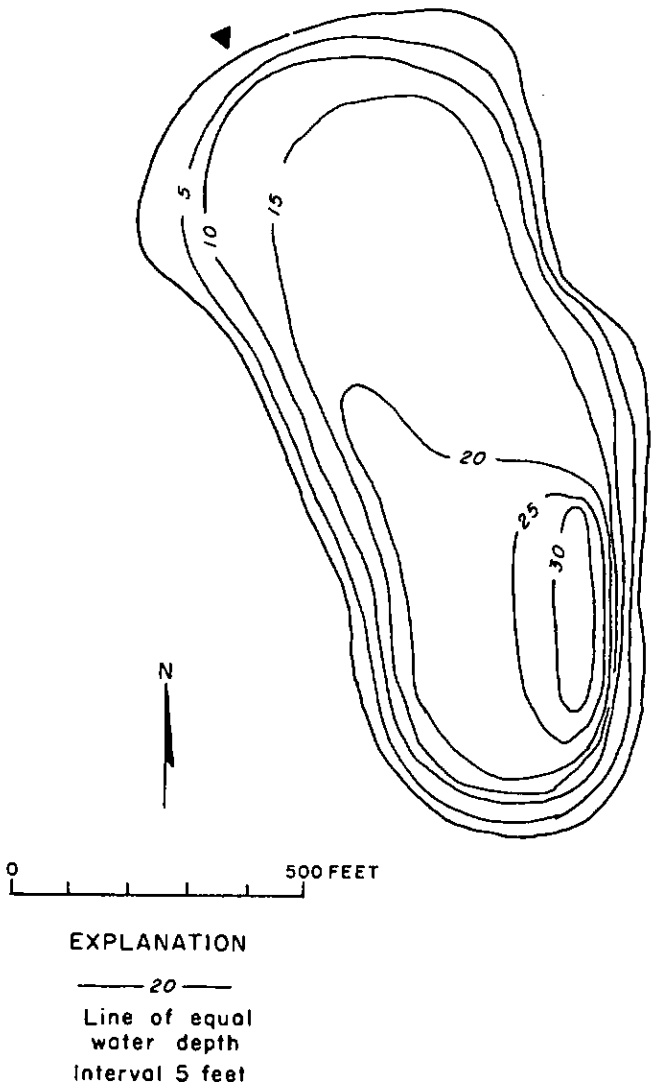
SAMPLE SITE	1	
DATE	10/ 5/70	
TIME	1020	1030
DEPTH (FT)	4.	23.
DISSOLVED NITRATE (N)	0.20	0.09
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.55	0.48
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.020	0.19
DISSOLVED ORTHOPHOSPHATE (P)	0.006	0.18
SPECIFIC CONDUCTANCE (MICROMHOS)	31	36
WATER TEMPERATURE (DEG C)	14.2	6.9
COLOR (PLATINUM-COBALT UNITS)	40	60
SECCHI-DISC VISIBILITY (FT)	5	
DISSOLVED OXYGEN	9.0	0.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

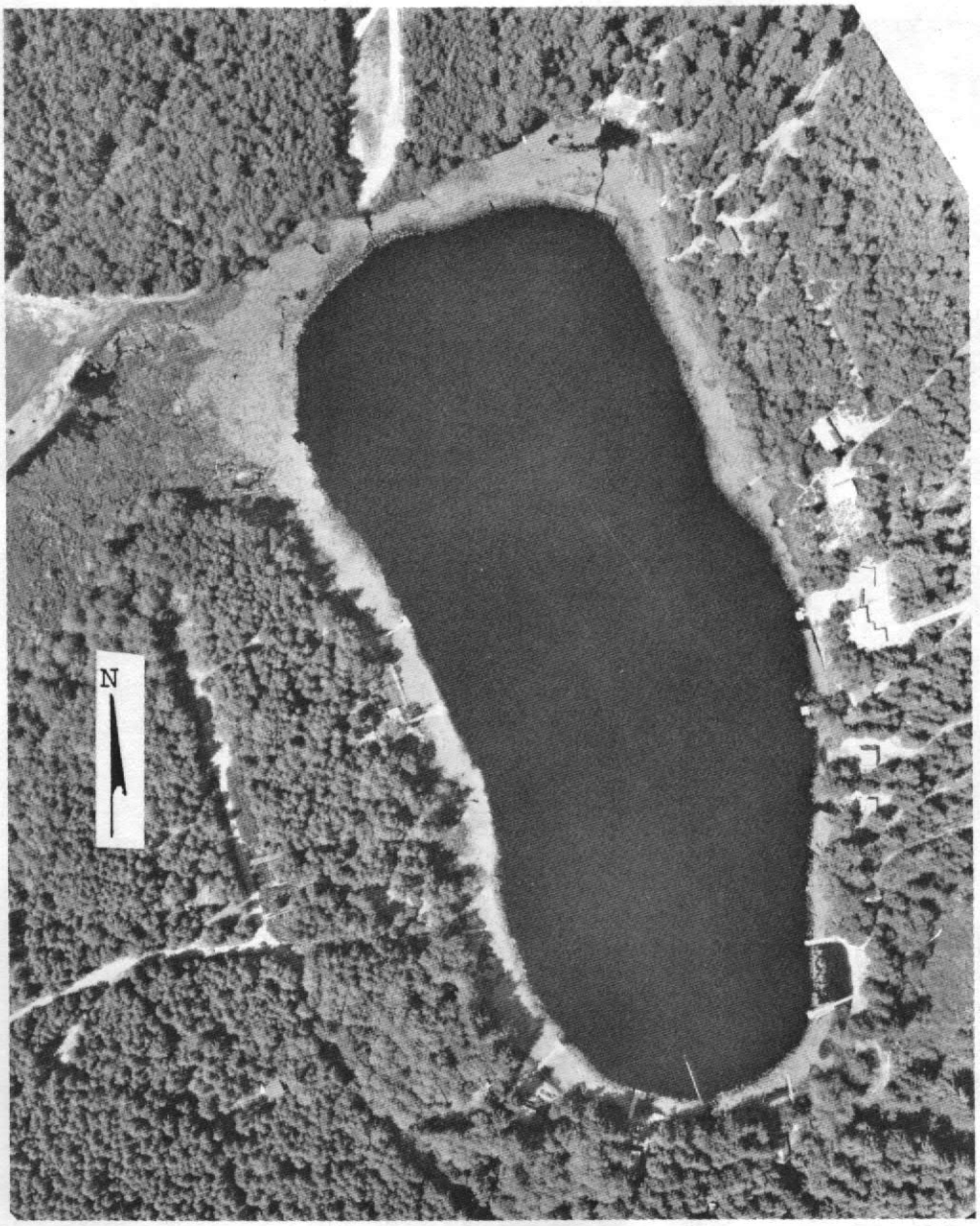
DATE	0/ 0/ 0
TIME	0
NUMBER OF FECAL COLIFORM SAMPLES	0
FECAL COLIFORM, MINIMUM (COL./100ML)	--
FECAL COLIFORM, MAXIMUM (COL./100ML)	--
FECAL COLIFORM, MEAN (COL./100ML)	--

REMARKS

EMERSED PLANTS COVERED THE SHORELINE IN A WIDE MARGIN AROUND THE LAKE. THE LITTORAL ZONE OF THE LAKE IS COMPOSED OF MUCK AND SILT WITH SOME SAND. IN 1970 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE THREE TIMES. THE PLANT SURVEY WAS MADE ON OCTOBER 5, 1970.



Jackson Lake, Pierce County. From Washington Department of Game, August 16, 1954.



Jackson Lake, Pierce County. July 14, 1971. Approx. scale 1:3300.

JOSEPHINE LAKE PIERCE COUNTY

LATITUDE 47° 9'13" LONGITUDE 122°40'41" T19N-R1E-9
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.92 SQ MI	RESIDENTIAL DEVELOPMENT	21 %
ALTITUDE	196. FT		
LAKE AREA	88. ACRES	NUMBER OF NEARSHORE HOMES	17
LAKE VOLUME	1100. ACRE-FT		
MEAN DEPTH	12. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	23. FT		
SHORELINE LENGTH	2.2 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.7	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.52	AGRICULTURAL	0 %
BOTTOM SLOPE	1.0 %	FOREST OR UNPRODUCTIVE	74 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	26 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

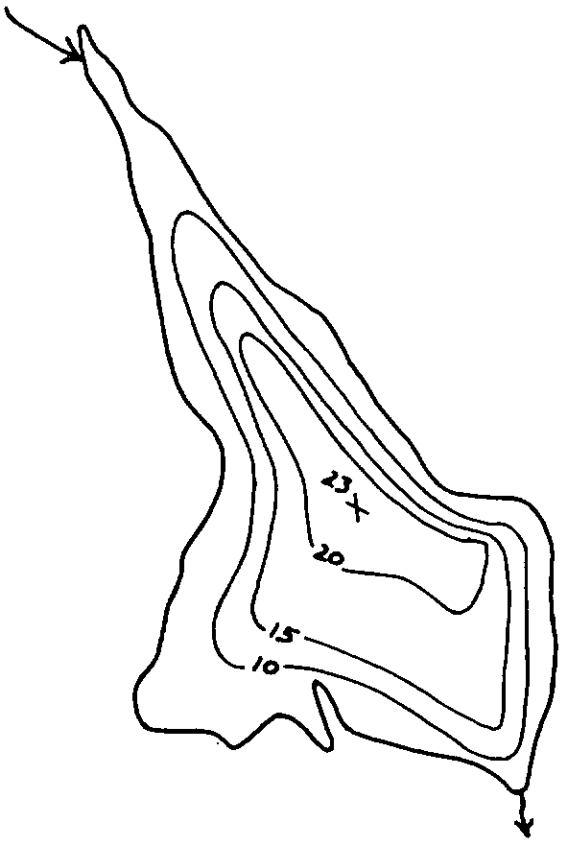
SAMPLE SITE	1	
DATE	8/21/74	
TIME	1220	1225
DEPTH (FT)	3.	20.
TOTAL NITRATE (N)	0.02	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.04
TOTAL ORGANIC NITROGEN (N)	0.41	0.49
TOTAL PHOSPHORUS (P)	0.009	0.015
TOTAL ORTHOPHOSPHATE (P)	0.002	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	50	45
WATER TEMPERATURE (DEG C)	20.1	19.9
COLOR (PLATINUM-COBALT UNITS)	5	0
SECCHI-DISC VISIBILITY (FT)	16	
DISSOLVED OXYGEN	8.3	6.5

LAKE SHORELINE COVERED BY EMERSED PLANTS	51- 75 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/21/74
TIME	1240
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

THE LAKE IS FED FROM FLORENCE LAKE. A DENSE COVER OF SUBMERSED PLANTS (WATER MILFOIL) WAS OBSERVED IN THE NARROW NORTH BAY. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN, EXCEPT NEAR THE LAKE BOTTOM.



N

0 1000 2000 FEET

EXPLANATION

—15—

Line of equal
water depth
Interval 5 feet

Josephine Lake, Pierce County. From Washington Department of Conservation, date unknown.

Josephine Lake, Pierce County. May 24, 1970. Approx. scale 1:12,000.

KAPOWSIN LAKE PIERCE COUNTY

LATITUDE 46°57'32" LONGITUDE 122°13'55" T17N-R5E-18
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	24.4 SQ MI	RESIDENTIAL DEVELOPMENT	1 %
ALTITUDE	600. FT		
LAKE AREA	590. ACRES	NUMBER OF NEARSHORE HOMES	2
LAKE VOLUME	8300. ACRE-FT		
MEAN DEPTH	14. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	29. FT		
SHORELINE LENGTH	9.0 MI	RESIDENTIAL URBAN	<1 %
SHORELINE CONFIGURATION	2.6	RESIDENTIAL SUBURBAN	1 %
DEVELOPMENT OF VOLUME	0.48	AGRICULTURAL	4 %
BOTTOM SLOPE	0.51 %	FOREST OR UNPRODUCTIVE	91 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	4 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

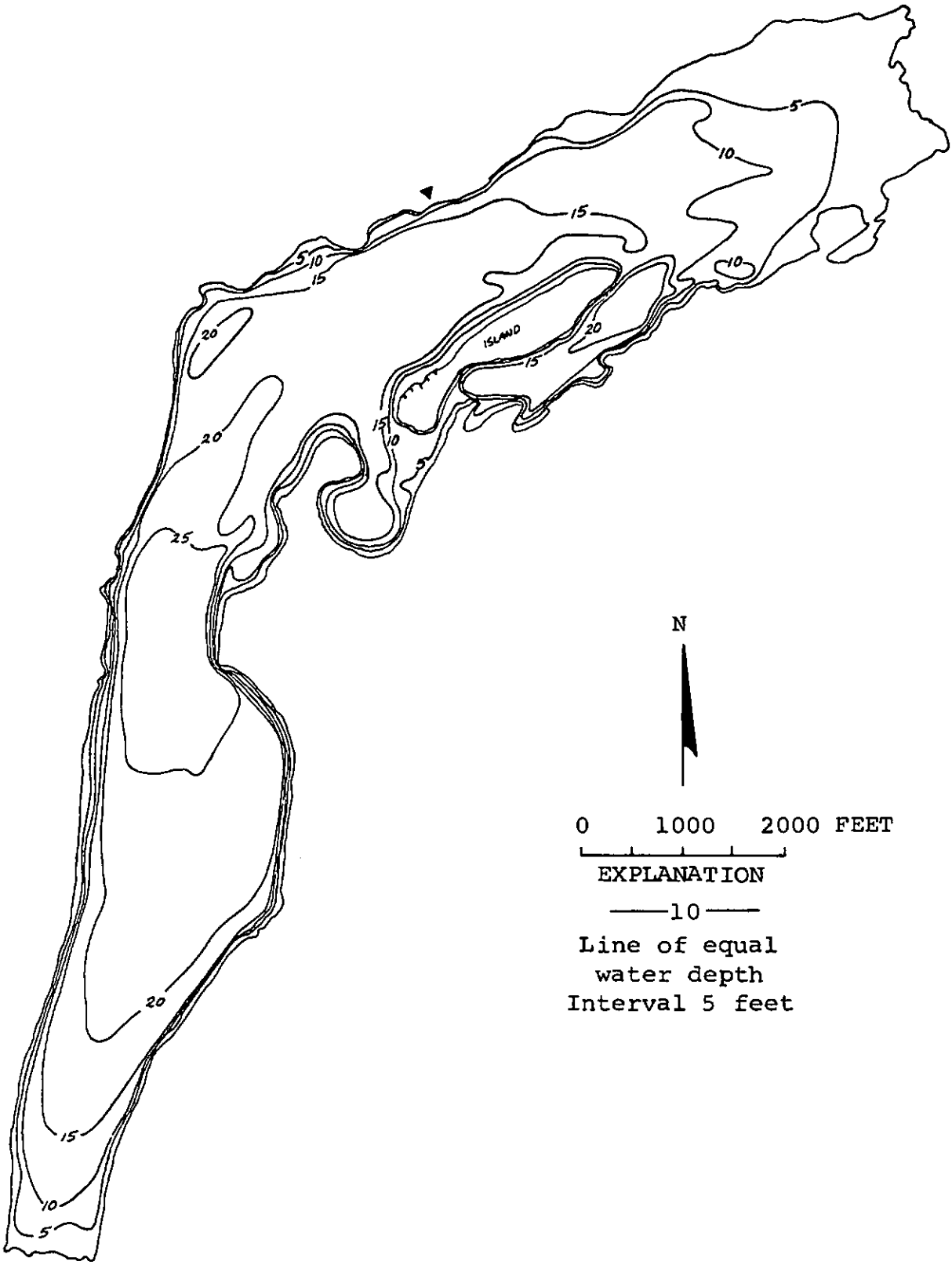
SAMPLE SITE	1	
DATE	8/10/73	
TIME	1240	1245
DEPTH (FT)	3.	24.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.06	0.57
TOTAL ORGANIC NITROGEN (N)	0.20	0.08
TOTAL PHOSPHORUS (P)	0.015	0.26
TOTAL ORTHOPHOSPHATE (P)	0.011	0.22
SPECIFIC CONDUCTANCE (MICROMHOS)	56	68
WATER TEMPERATURE (DEG C)	21.1	11.5
COLOR (PLATINUM-COBALT UNITS)	15	125
SECCHI-DISC VISIBILITY (FT)	8	
DISSOLVED OXYGEN	10.4	0.3

LAKE SHORELINE COVERED BY EMERSED PLANTS	1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/10/73
TIME	1255
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	8
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

THE LAKE FORMED ABOUT 600 YEARS AGO WHEN THE ELECTRON MUDFLOW FROM MT. RAINIER IMPOUNDED OHOP CREEK. THE NORTH END OF THE LAKE IS CHOKED WITH FLOATING LOGS AND SNAGS EXTENDING 1000-1200 FEET FROM SHORE. THE NEXT 1000 FEET INTO THE LAKE WAS COVERED WITH SUBMERSED PLANTS INTERSPERSED WITH STUMPS AND SNAGS. SUBMERSED PLANTS WERE OBSERVED IN THE SHALLOW BAYS. A LOW-DENSITY ALGAL BLOOM WAS OBSERVED AND HYDROGEN SULFIDE WAS DETECTED IN THE HYPOLIMNION.



Kapowsin Lake, Pierce County. From
U.S. Geological Survey, July 17, 1973.

Kapowsin Lake, Pierce County. May 24, 1970. Approx. scale 1:16,000.

KREGER LAKE PIERCE COUNTY

LATITUDE 46*52' 2" LONGITUDE 122*23'46" T16N-R3E-14
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	4.87 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	531. FT		
LAKE AREA	42. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME (EST.)	280. ACRE-FT		
MEAN DEPTH (EST.)	7. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	12. FT		
SHORELINE LENGTH	1.2 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.3	RESIDENTIAL SUBURBAN	1 %
DEVELOPMENT OF VOLUME	0.55	AGRICULTURAL	38 %
BOTTOM SLOPE	0.79 %	FOREST OR UNPRODUCTIVE	55 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	6 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

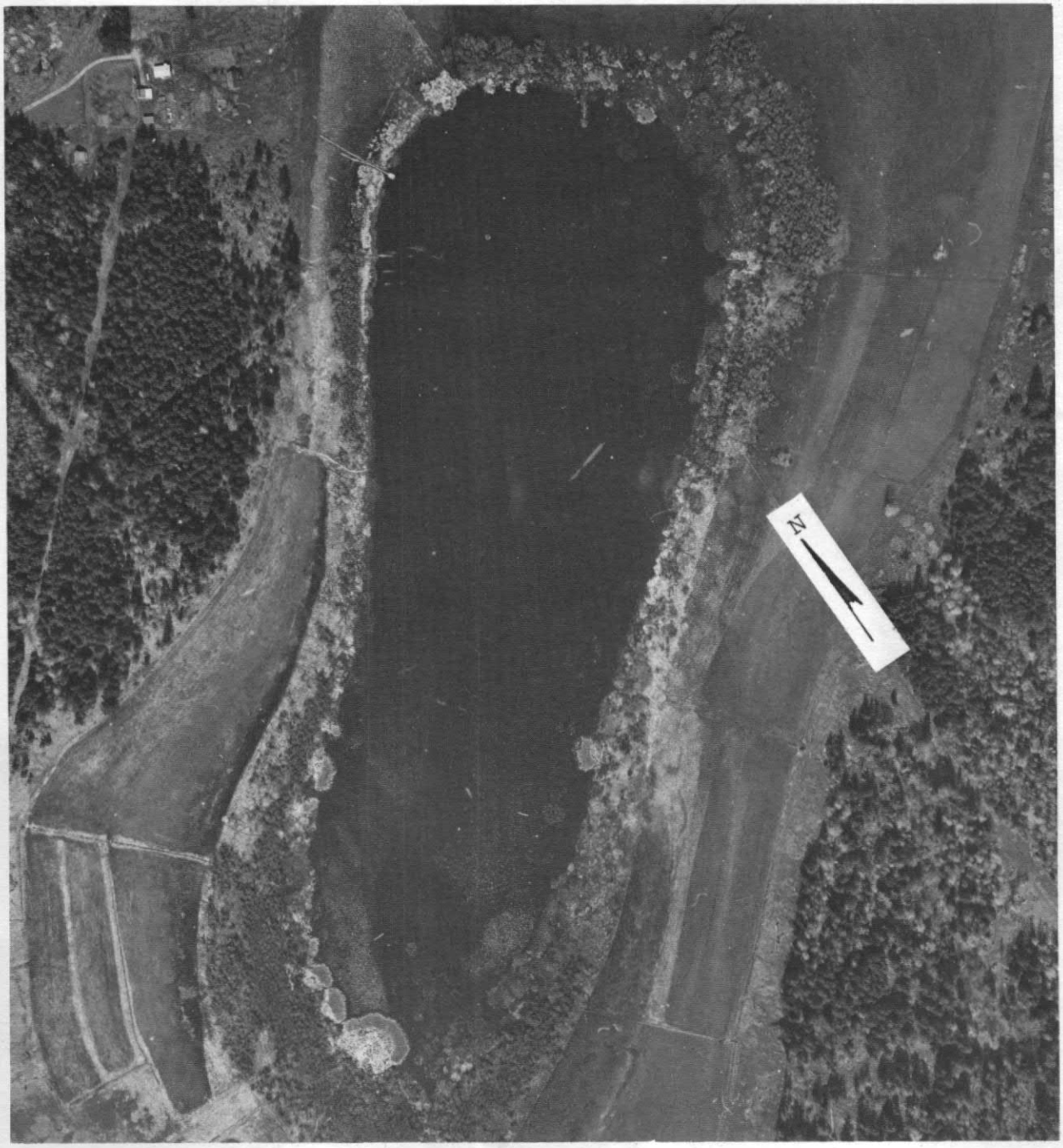
SAMPLE SITE	1	
DATE	8/11/73	
TIME	1640	1645
DEPTH (FT)	2.	3.
TOTAL NITRATE (N)	0.01	--
TOTAL NITRITE (N)	0.01	--
TOTAL AMMONIA (N)	0.50	--
TOTAL ORGANIC NITROGEN (N)	1.8	--
TOTAL PHOSPHORUS (P)	0.45	--
TOTAL ORTHOPHOSPHATE (P)	0.22	--
SPECIFIC CONDUCTANCE (MICROMHOS)	134	--
WATER TEMPERATURE (DEG C)	22.5	22.0
COLOR (PLATINUM-COBALT UNITS)	55	--
SECCHI-DISC VISIBILITY (FT)	2	
DISSOLVED OXYGEN	10.2	9.6

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

DATE	8/11/73
TIME	1645
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	17
FECAL COLIFORM, MEAN (COL./100ML)	8

REMARKS

THE LAKE IS FED BY SILVER LAKE. EMERSED PLANTS COVERED THE SHORELINE AND SUBMERSED PLANTS COVERED THE NEARSHORE LAKE BOTTOM. THE LITTORAL BOTTOM IS MUCK AND THE WATER IS A BROWN COLOR. AN ALGAL BLOOM WAS OBSERVED. THE LAKE VOLUME IS ESTIMATED.



Kreger Lake, Pierce County. April 3, 1973. Approx. scale 1:4800.

LAGRANDE LAKE PIERCE COUNTY

LATITUDE 46*49'23" LONGITUDE 122*18'13" T16N-R4E-33
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	289. SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	935. FT		
LAKE AREA	55. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	2700. ACRE-FT		
MEAN DEPTH	49. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	150. FT		
SHORELINE LENGTH	3.4 MI	RESIDENTIAL URBAN	<1 %
SHORELINE CONFIGURATION	3.2	RESIDENTIAL SUBURBAN	<1 %
DEVELOPMENT OF VOLUME	0.32	AGRICULTURAL	1 %
BOTTOM SLOPE	8.7 %	FOREST OR UNPRODUCTIVE	97 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	2 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1	
DATE	8/22/74	
TIME	1340	1345
DEPTH (FT)	3.	128.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.01	0.01
TOTAL AMMONIA (N)	0.16	0.11
TOTAL ORGANIC NITROGEN (N)	0.16	0.07
TOTAL PHOSPHORUS (P)	0.026	0.015
TOTAL ORTHOPHOSPHATE (P)	0.021	0.011
SPECIFIC CONDUCTANCE (MICROMHOS)	40	46
WATER TEMPERATURE (DEG C)	12.3	9.8
COLOR (PLATINUM-COBALT UNITS)	5	5
SECCHI-DISC VISIBILITY (FT)	2	
DISSOLVED OXYGEN	10.0	7.7

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/22/74
TIME	1350
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

A HYDROPOWER RESERVOIR LOCATED BELOW ALDER DAM ON THE NISQUALLY RIVER. THE LAKE IS IN A LONG AND NARROW CANYON. GLACIAL MELTWATER FROM THE NISQUALLY GLACIER ON MT RAINIER GAVE THE WATER A MURKY APPEARANCE. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN. SUBMERGED STUMPS WERE OBSERVED LOCALLY ALONG THE SHORELINE. THE U.S. GEOLOGICAL SURVEY HAS MAINTAINED A WATER-STAGE RECORDER ON THE LAKE SINCE 1945.

La Grande Lake, Pierce County. May 16, 1970. Approx. scale 1:12,000.

LILY LAKE PIERCE COUNTY

LATITUDE 47° 2'35" LONGITUDE 121°48'46" T18N-R8E-17
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.17 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	4060. FT		
LAKE AREA	9. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	300. ACRE-FT		
MEAN DEPTH	35. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	78. FT		
SHORELINE LENGTH	0.57 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.4	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.45	AGRICULTURAL	0 %
BOTTOM SLOPE	11. %	FOREST OR UNPRODUCTIVE	92 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	8 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

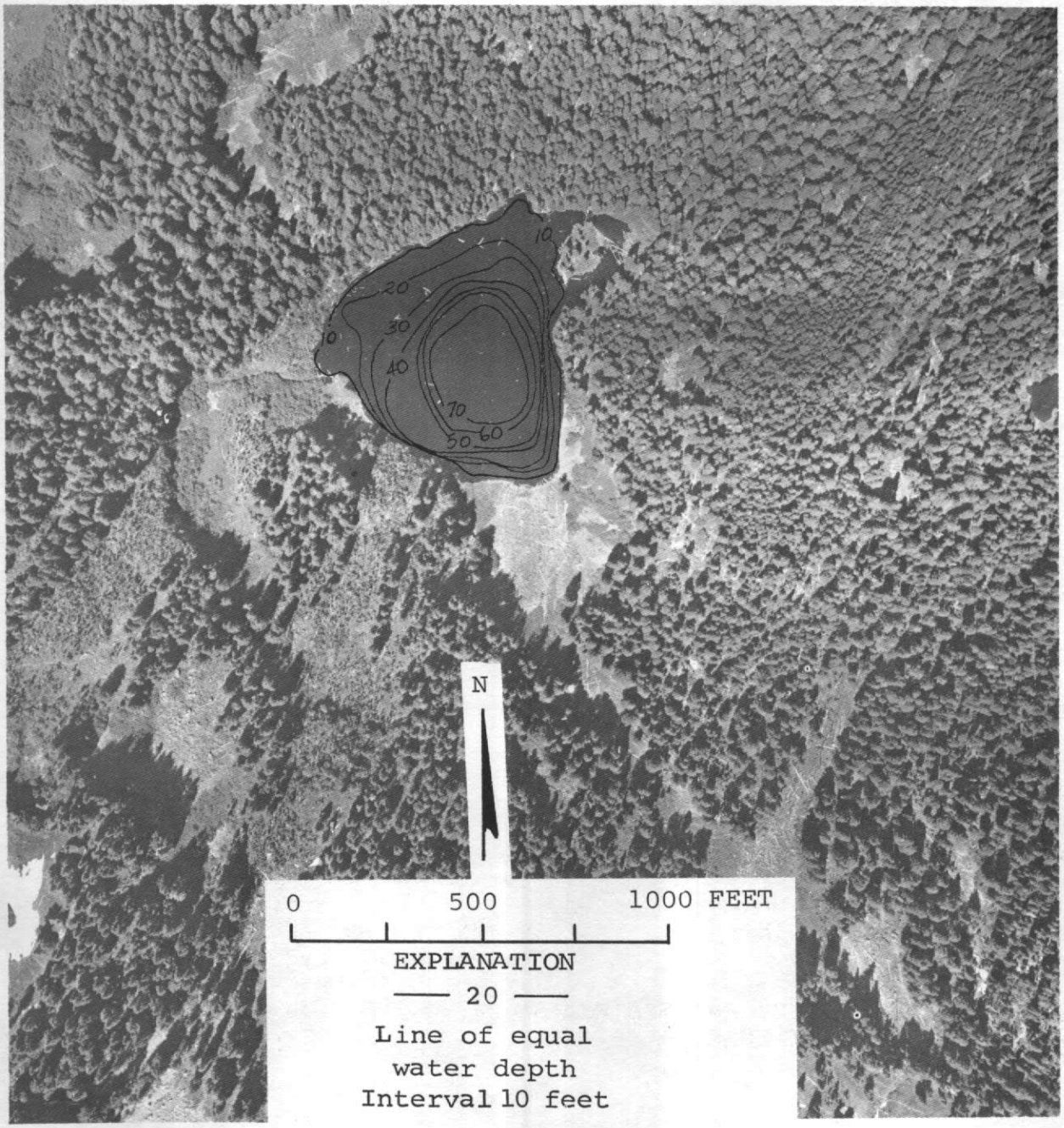
SAMPLE SITE	1	
DATE	7/17/73	
TIME	1300	1310
DEPTH (FT)	3.	49.
TOTAL NITRATE (N)	0.03	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.03	0.15
TOTAL ORGANIC NITROGEN (N)	0.04	0.06
TOTAL PHOSPHORUS (P)	0.007	0.009
TOTAL ORTHOPHOSPHATE (P)	0.001	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	21	45
WATER TEMPERATURE (DEG C)	16.8	4.0
COLOR (PLATINUM-COBALT UNITS)	0	20
SECCHI-DISC VISIBILITY (FT)	30	
DISSOLVED OXYGEN	8.2	0.4

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	7/17/73
TIME	1310
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

NO EMERSED OR SUBMERSED AQUATIC PLANTS WERE OBSERVED. FLOATING AND SUBMERSED LOGS COVERED THE SHORELINE.



Lily Lake, Pierce County. Bathymetric map from U.S. Geological Survey, September 2, 1973. Aerial photo, July 14, 1973.

LITTLE (LITTLE HART) LAKE PIERCE COUNTY

LATITUDE 46*53'18" LONGITUDE 122*28' 6" T16N-R3E-7
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.90 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	349. FT		
LAKE AREA	12. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	80. ACRE-FT		
MEAN DEPTH	7. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	12. FT		
SHORELINE LENGTH	0.55 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.1	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.55	AGRICULTURAL	12 %
BOTTOM SLOPE	1.5 %	FOREST OR UNPRODUCTIVE	86 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	2 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

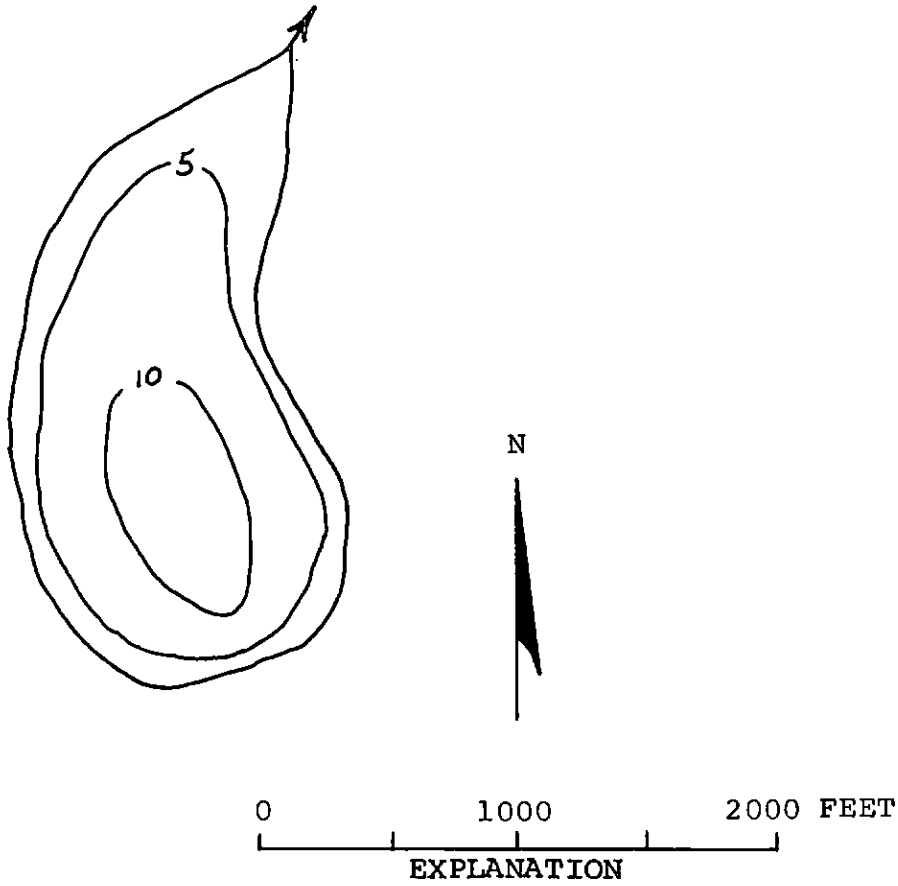
SAMPLE SITE	1	
DATE	8/11/73	
TIME	1600	1610
DEPTH (FT)	3.	6.
TOTAL NITRATE (N)	0.02	--
TOTAL NITRITE (N)	0.01	--
TOTAL AMMONIA (N)	0.36	--
TOTAL ORGANIC NITROGEN (N)	0.94	--
TOTAL PHOSPHORUS (P)	0.21	--
TOTAL ORTHOPHOSPHATE (P)	0.092	--
SPECIFIC CONDUCTANCE (MICROMHOS)	194	--
WATER TEMPERATURE (DEG C)	20.3	17.8
COLOR (PLATINUM-COBALT UNITS)	30	--
SECCHI-DISC VISIBILITY (FT)	> 8	
DISSOLVED OXYGEN	9.7	1.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

DATE	8/11/73
TIME	1610
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	3
FECAL COLIFORM, MAXIMUM (COL./100ML)	12
FECAL COLIFORM, MEAN (COL./100ML)	7

REMARKS

THE LAKE DRAINS TO HART LAKE. THE LAKE HAD A HEAVY COVER OF EMERSED AND SUBMERSED AQUATIC PLANTS. THE LITTORAL BOTTOM IS SOFT MUCK. AN ALGAL BLOOM WAS OBSERVED.



Little (Little Hart) Lake, Pierce County.
From Washington Department of Game, June 1, 1953.

Little (Little Hart) Lake, Pierce County. April 27, 1973. Approx. scale 1:4800.

LONESOME LAKE PIERCE COUNTY

LATITUDE 47* 0'19" LONGITUDE 121*39'47" T18N-R9E-33
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.36 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	4840. FT		
LAKE AREA	7. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	120. ACRE-FT		
MEAN DEPTH	17. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	42. FT		
SHORELINE LENGTH	0.40 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.1	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.40	AGRICULTURAL	0 %
BOTTOM SLOPE	6.7 %	FOREST OR UNPRODUCTIVE	97 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	3 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

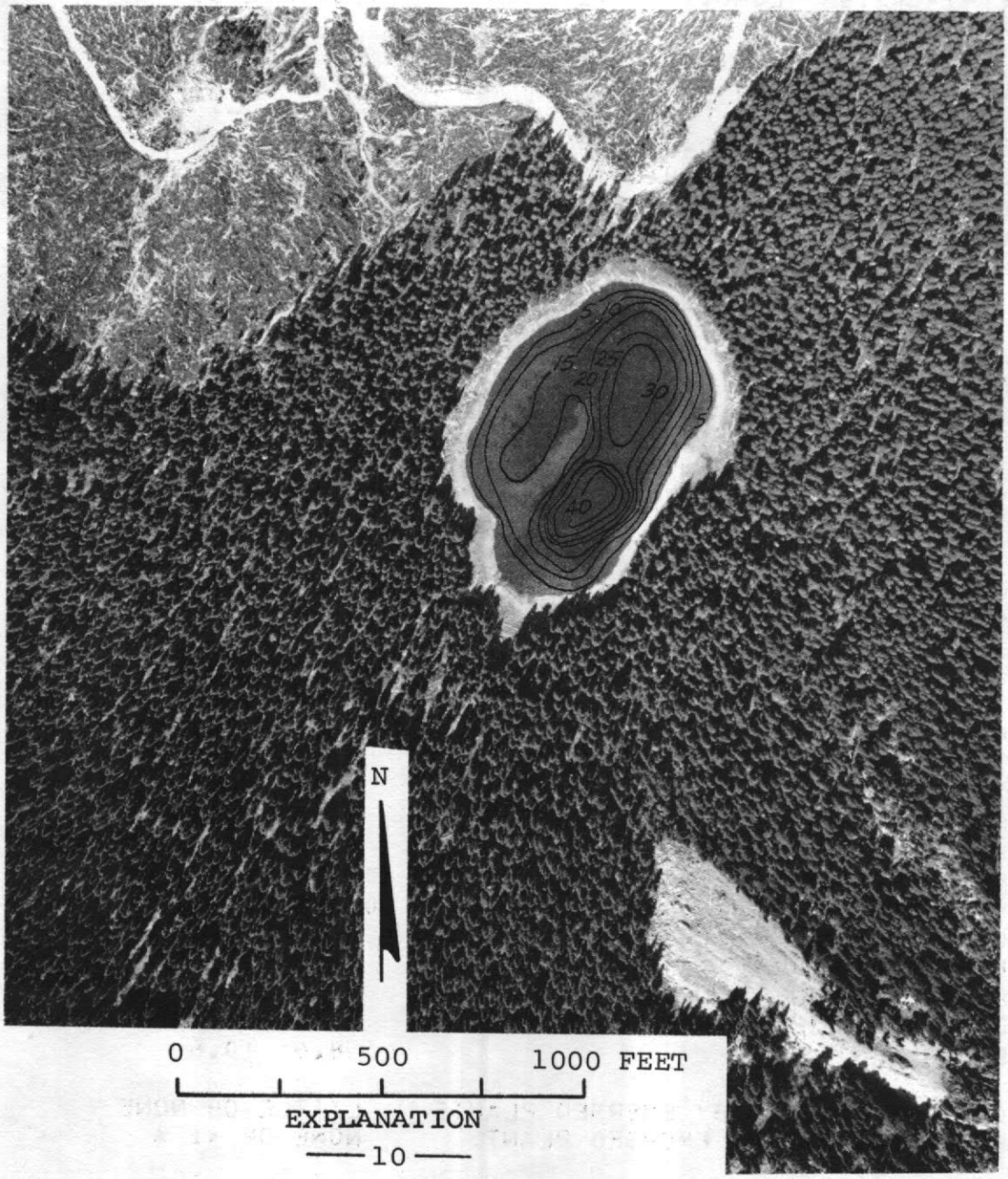
SAMPLE SITE	1	
DATE	8/ 9/73	
TIME	1330	1335
DEPTH (FT)	3.	39.
TOTAL NITRATE (N)	0.00	0.00
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.01	0.02
TOTAL ORGANIC NITROGEN (N)	0.01	0.04
TOTAL PHOSPHORUS (P)	0.002	0.013
TOTAL ORTHOPHOSPHATE (P)	0.002	0.003
SPECIFIC CONDUCTANCE (MICROMHOS)	17	17
WATER TEMPERATURE (DEG C)	17.1	9.1
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	>42	
DISSOLVED OXYGEN	8.6	10.6

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/ 9/73
TIME	1340
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

NO EMERSED OR SUBMERSED AQUATIC PLANTS WERE OBSERVED. THE LAKE STAGE WAS NOTICEABLY LOWER THAN NORMAL.



Lonesome Lake, Pierce County. Bathymetric map from U.S. Geological Survey, August 28, 1973. Aerial photo, August 3, 1973.

LOST LAKE PIERCE COUNTY

LATITUDE 47° 2'41" LONGITUDE 131°27'36" T18N-R11E-18
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	3.30 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	3985. FT		
LAKE AREA	15. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	150. ACRE-FT		
MEAN DEPTH	10. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	19. FT		
SHORELINE LENGTH	0.65 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.54	AGRICULTURAL	0 %
BOTTOM SLOPE	2.1 %	FOREST OR UNPRODUCTIVE	99 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	1 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

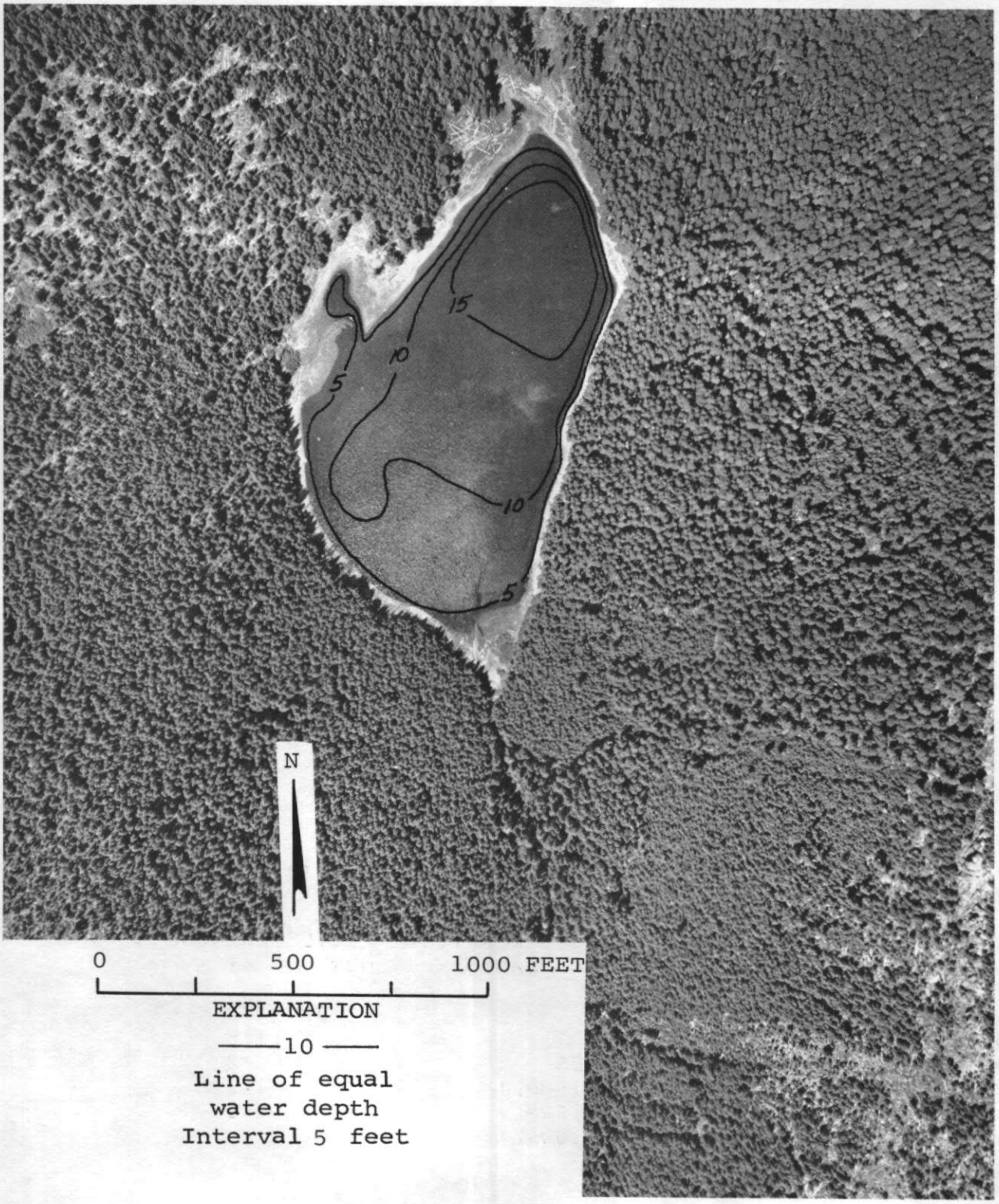
SAMPLE SITE	1	
DATE	8/ 9/73	
TIME	1105	1110
DEPTH (FT)	3.	10.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.05	0.05
TOTAL ORGANIC NITROGEN (N)	0.06	0.04
TOTAL PHOSPHORUS (P)	0.018	0.009
TOTAL ORTHOPHOSPHATE (P)	0.004	0.003
SPECIFIC CONDUCTANCE (MICROMHOS)	53	55
WATER TEMPERATURE (DEG C)	17.0	16.6
COLOR (PLATINUM-COBALT UNITS)	5	10
SECCHI-DISC VISIBILITY (FT)	>14	
DISSOLVED OXYGEN	8.0	8.1

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

DATE	8/ 9/73
TIME	1115
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

A SHALLOW HIGH-ALTITUDE LAKE. NO EMERSED OR SUBMERSED AQUATIC PLANTS WERE OBSERVED. DELTA DEPOSITS HAVE FORMED AT THE INFLOWS. THE LITTORAL BOTTOM IN LOCAL AREAS IS COMPOSED OF MUCK. THE LAKE STAGE WAS NOTICEABLY LOWER THAN NORMAL.



Lost Lake, Pierce County. Bathymetric map from U.S. Geological Survey, August 28, 1973. Aerial photo, July 14, 1973.

LOUISE LAKE PIERCE COUNTY

LATITUDE 47° 9'36" LONGITUDE 122°34' 0" T19N-R2E-4
PUGET SOUND BASIN

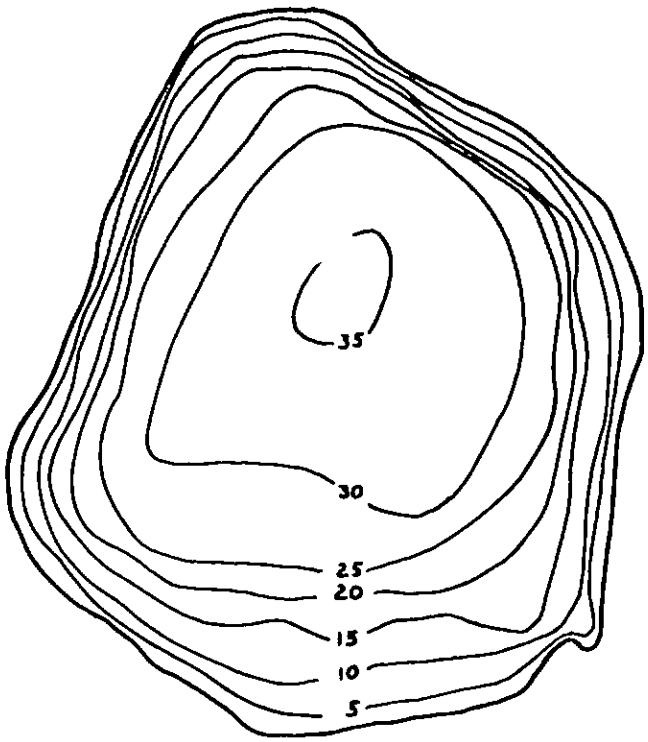
PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.34 SQ MI	RESIDENTIAL DEVELOPMENT	100 %
ALTITUDE	230. FT		
LAKE AREA	39. ACRES	NUMBER OF NEARSHORE HOMES	74
LAKE VOLUME	860. ACRE-FT		
MEAN DEPTH	22. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	35. FT		
SHORELINE LENGTH	0.91 MI	RESIDENTIAL URBAN	8 %
SHORELINE CONFIGURATION	1.0	RESIDENTIAL SUBURBAN	41 %
DEVELOPMENT OF VOLUME	0.63	AGRICULTURAL	21 %
BOTTOM SLOPE	2.4 %	FOREST OR UNPRODUCTIVE	12 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	18 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	--

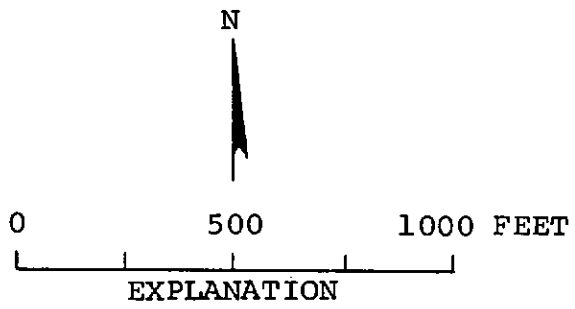
WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1	
DATE	6/18/73	
TIME	1450	1500
DEPTH (FT)	3.	28.
TOTAL NITRATE (N)	0.04	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.03	0.14
TOTAL ORGANIC NITROGEN (N)	0.12	0.03
TOTAL PHOSPHORUS (P)	0.009	0.024
TOTAL ORTHOPHOSPHATE (P)	0.002	0.002
SPECIFIC CONDUCTANCE (MICROMHOS)	74	74
WATER TEMPERATURE (DEG C)	18.0	13.2
COLOR (PLATINUM-COBALT UNITS)	5	10
SECCHI-DISC VISIBILITY (FT)	20	
DISSOLVED OXYGEN	9.4	2.0
LAKE SHORELINE COVERED BY EMERSED PLANTS	11- 25 %	
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %	
DATE	6/18/73	
TIME	1530	
NUMBER OF FECAL COLIFORM SAMPLES	3	
FECAL COLIFORM, MINIMUM (COL./100ML)	3	
FECAL COLIFORM, MAXIMUM (COL./100ML)	18	
FECAL COLIFORM, MEAN (COL./100ML)	16	

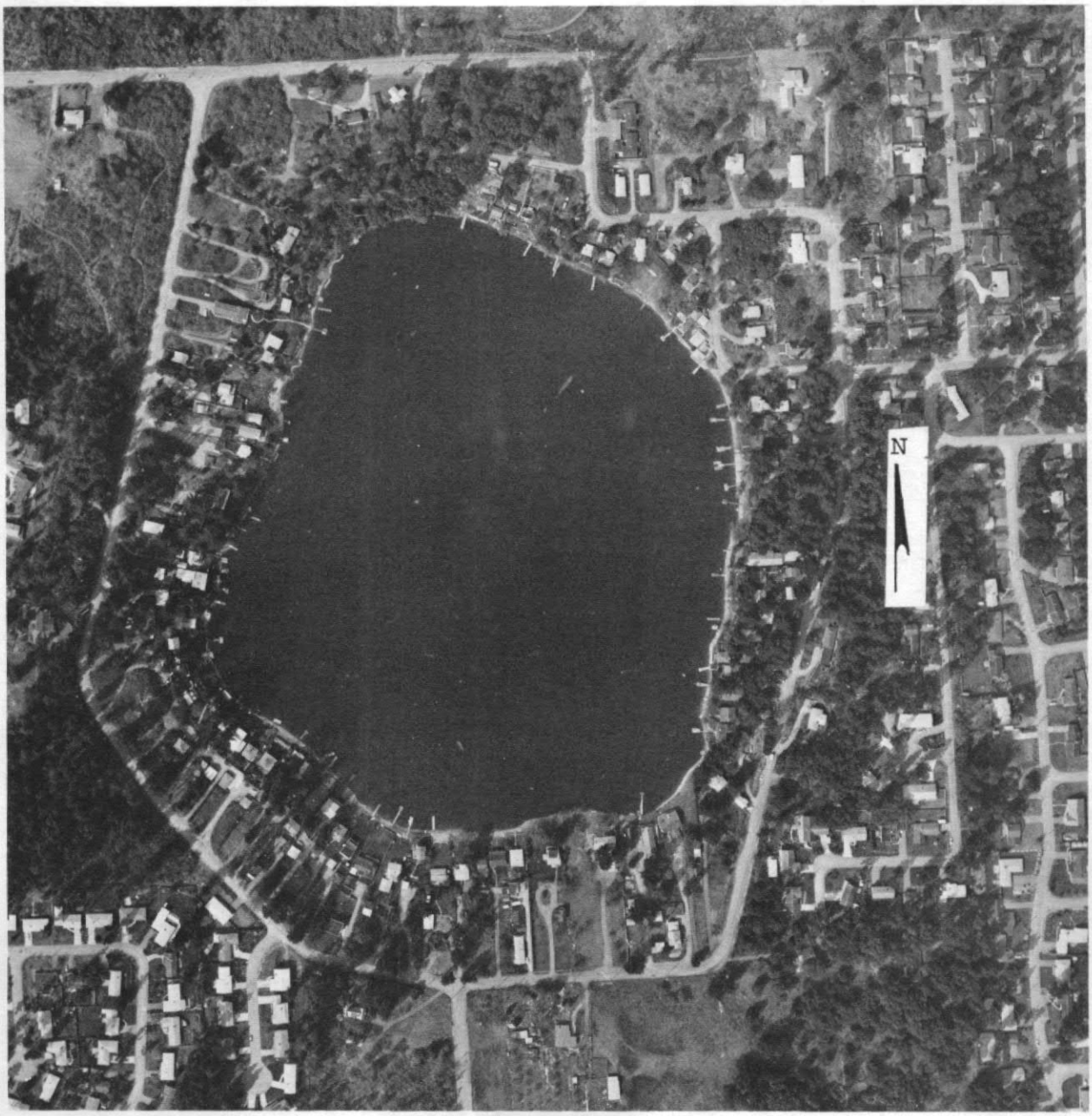
REMARKS

A SMALL LAKE LOCATED SOUTHWEST OF TACOMA IN A PARTIALLY URBAN DRAINAGE BASIN. THE GRAVEL AND COBBLE LITTORAL BOTTOM SUPPORTED RELATIVELY FEW EMERSED PLANTS, BUT APPROXIMATELY 65 PERCENT OF THE LAKE BOTTOM WAS COVERED BY SUBMERSED PLANTS (MOSTLY PONDWEED). THE TACOMA-PIERCE COUNTY HEALTH DEPARTMENT REPORTED OCCASIONAL HIGH COLIFORM-BACTERIA COUNTS FOR THE LAKE DURING THE SUMMER OF 1972. IN 1973 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON AUGUST 6, 1973.





Louise Lake, Pierce County. From Washington Department of Game, June 5, 1950.



Louise Lake, Pierce County. April 3, 1973. Approx. scale 1:4800.

MINTERWOOD LAKE PIERCE COUNTY

LATITUDE 47°21'17" LONGITUDE 122°44' 7" T22N-R1E-31
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.14 SQ MI	RESIDENTIAL DEVELOPMENT	22 %
ALTITUDE	152. FT		
LAKE AREA	22. ACRES	NUMBER OF NEARSHORE HOMES	7
LAKE VOLUME	160. ACRE-FT		
MEAN DEPTH	7. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	10. FT		
SHORELINE LENGTH	1.1 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.7	RESIDENTIAL SUBURBAN	9 %
DEVELOPMENT OF VOLUME	0.74	AGRICULTURAL	0 %
BOTTOM SLOPE	0.91 %	FOREST OR UNPRODUCTIVE	66 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	25 %
INFLOW	NOT DETERMINED		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

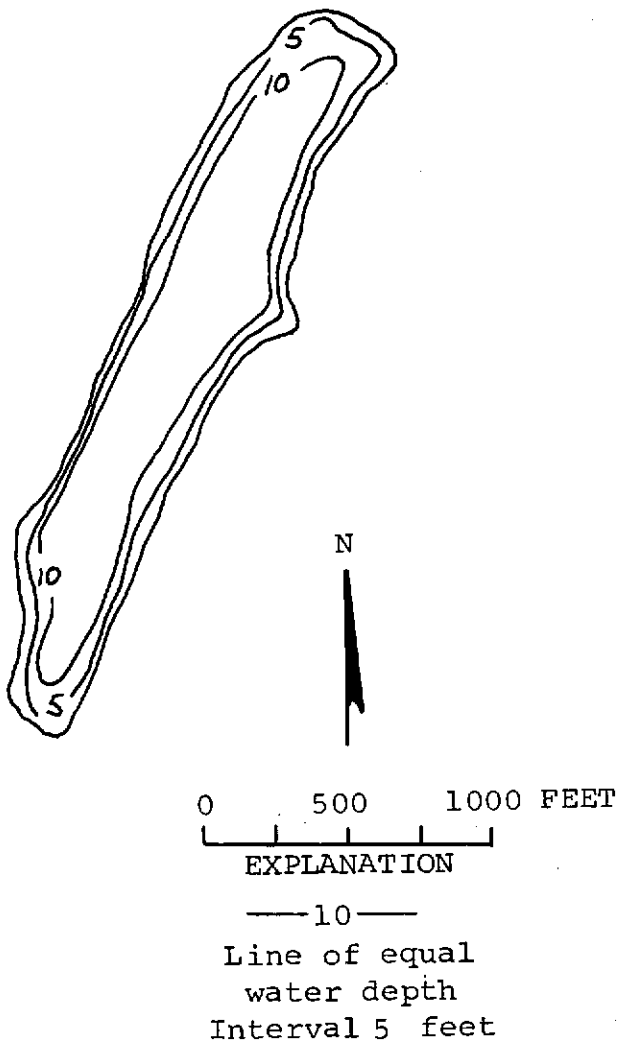
SAMPLE SITE	1	
DATE	8/27/74	
TIME	1500	1505
DEPTH (FT)	2.	7.
TOTAL NITRATE (N)	0.00	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.11	0.13
TOTAL ORGANIC NITROGEN (N)	0.42	0.56
TOTAL PHOSPHORUS (P)	0.037	0.053
TOTAL ORTHOPHOSPHATE (P)	0.005	0.005
SPECIFIC CONDUCTANCE (MICROMHOS)	65	65
WATER TEMPERATURE (DEG C)	22.0	22.0
COLOR (PLATINUM-COBALT UNITS)	15	15
SECCHI-DISC VISIBILITY (FT)	> 8	
DISSOLVED OXYGEN	8.2	8.1

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	0/ 0/ 0
TIME	0
NUMBER OF FECAL COLIFORM SAMPLES	0
FECAL COLIFORM, MINIMUM (COL./100ML)	--
FECAL COLIFORM, MAXIMUM (COL./100ML)	--
FECAL COLIFORM, MEAN (COL./100ML)	--

REMARKS

AN ARTIFICIAL LAKE CREATED FOR RESIDENTIAL AND RECREATIONAL DEVELOPMENT. THE OUTLET IS A BOX-CULVERT OVERFLOW. EMERSED PLANTS COVERED THE SHORELINE IN BOTH A THIN BAND AND IN SCATTERED BEDS. SUBMERSED PLANTS (PONDWEED) COVERED MUCH OF THE LAKE BOTTOM.



Minterwood Lake, Pierce County. From
U.S. Geological Survey, February 5, 1974.

Minterwood Lake, Pierce County. July 13, 1974. Approx. scale 1:4800.

MORGAN LAKE PIERCE COUNTY

LATITUDE 47* 0'48" LONGITUDE 122*13'41" T18N-R5E-30
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.20 SQ MI	RESIDENTIAL DEVELOPMENT	3 %
ALTITUDE	688. FT		
LAKE AREA	27. ACRES	NUMBER OF NEARSHORE HOMES	1
LAKE VOLUME	310. ACRE-FT		
MEAN DEPTH	12. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	23. FT		
SHORELINE LENGTH	0.79 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.1	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.51	AGRICULTURAL	26 %
BOTTOM SLOPE	1.9 %	FOREST OR UNPRODUCTIVE	70 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	4 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1	
DATE	8/26/74	
TIME	1325	1330
DEPTH (FT)	3.	13.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.01	0.01
TOTAL AMMONIA (N)	0.28	0.54
TOTAL ORGANIC NITROGEN (N)	2.8	0.81
TOTAL PHOSPHORUS (P)	0.029	0.050
TOTAL ORTHOPHOSPHATE (P)	0.026	0.033
SPECIFIC CONDUCTANCE (MICROMHOS)	52	78
WATER TEMPERATURE (DEG C)	19.3	10.7
COLOR (PLATINUM-COBALT UNITS)	--	--
SECCHI-DISC VISIBILITY (FT)	2	
DISSOLVED OXYGEN	10.8	0.1

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

DATE	8/26/74
TIME	1340
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	14
FECAL COLIFORM, MAXIMUM (COL./100ML)	30
FECAL COLIFORM, MEAN (COL./100ML)	23

REMARKS

EMERSED AQUATIC PLANTS COVERED THE SHORELINE. THE LITTORAL BOTTOM IS SILTY MUCK. AN ALGAL BLOOM WAS OBSERVED AND HYDROGEN SULFIDE WAS DETECTED IN THE HYPOLIMNION.

Morgan Lake, Pierce County. Bathymetric map from U.S. Geological Survey, February 7, 1974. Aerial photo, May 24, 1970.

MUD LAKE PIERCE COUNTY

LATITUDE 46*55'18" LONGITUDE 122*18'32" T17N-R4E-33
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.37 SQ MI	RESIDENTIAL DEVELOPMENT	6 %
ALTITUDE	623. FT		
LAKE AREA	21. ACRES	NUMBER OF NEARSHORE HOMES	1
LAKE VOLUME	180. ACRE-FT		
MEAN DEPTH	9. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	14. FT		
SHORELINE LENGTH	0.66 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.0	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.61	AGRICULTURAL	42 %
BOTTOM SLOPE	1.3 %	FOREST OR UNPRODUCTIVE	56 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	2 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

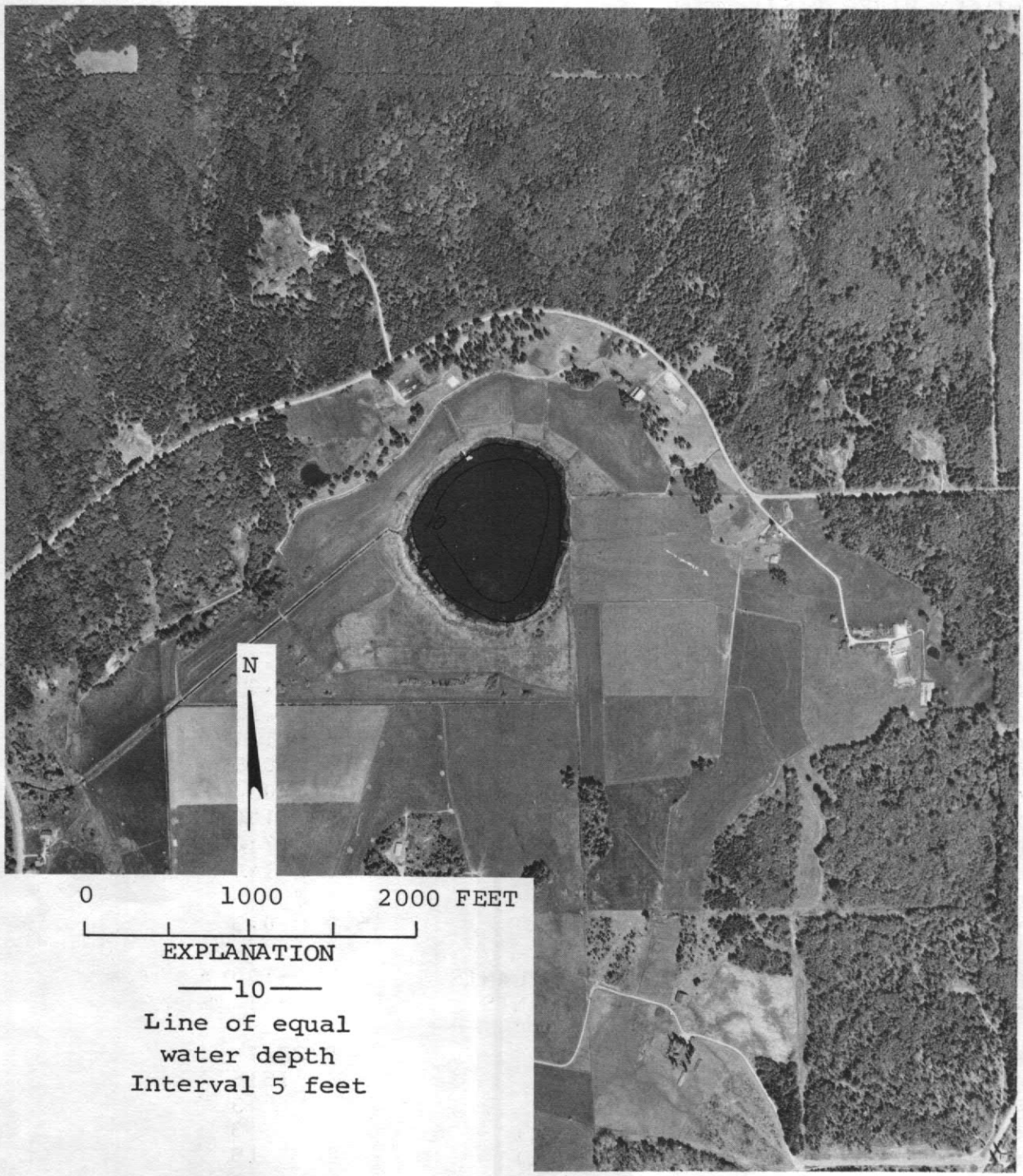
SAMPLE SITE	1	
DATE	8/22/74	
TIME	1510	1515
DEPTH (FT)	3.	7.
TOTAL NITRATE (N)	0.00	0.00
TOTAL NITRITE (N)	0.01	0.01
TOTAL AMMONIA (N)	0.23	0.23
TOTAL ORGANIC NITROGEN (N)	1.5	1.1
TOTAL PHOSPHORUS (P)	0.12	0.085
TOTAL ORTHOPHOSPHATE (P)	0.031	0.036
SPECIFIC CONDUCTANCE (MICROMHOS)	100	100
WATER TEMPERATURE (DEG C)	17.3	17.0
COLOR (PLATINUM-COBALT UNITS)	160	140
SECCHI-DISC VISIBILITY (FT)	2	
DISSOLVED OXYGEN	5.0	0.3

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/22/74
TIME	1515
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	3
FECAL COLIFORM, MAXIMUM (COL./100ML)	15
FECAL COLIFORM, MEAN (COL./100ML)	7

REMARKS

EMERSED PLANTS COVERED THE SHORELINE IN A THIN MARGIN AROUND THE LAKE. AN ALGAL BLOOM WAS OBSERVED. THE WATER IS BROWN COLOR. THE LITTORAL BOTTOM IS SILTY MUCK.



Mud Lake, Pierce County. Bathymetric map from U.S. Geological Survey, January 15, 1974. Aerial photo, May 16, 1970.

MUD MOUNTAIN LAKE PIERCE COUNTY

LATITUDE 0° 0' 0" LONGITUDE 0° 0' 0" T19N-R7E-17
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	400. SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	1070. FT		
LAKE AREA	340. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	19000. ACRE-FT		
MEAN DEPTH	54. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	170. FT		
SHORELINE LENGTH	6.9 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.6	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.33	AGRICULTURAL	0 %
BOTTOM SLOPE	3.8 %	FOREST OR UNPRODUCTIVE	100 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	<1 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

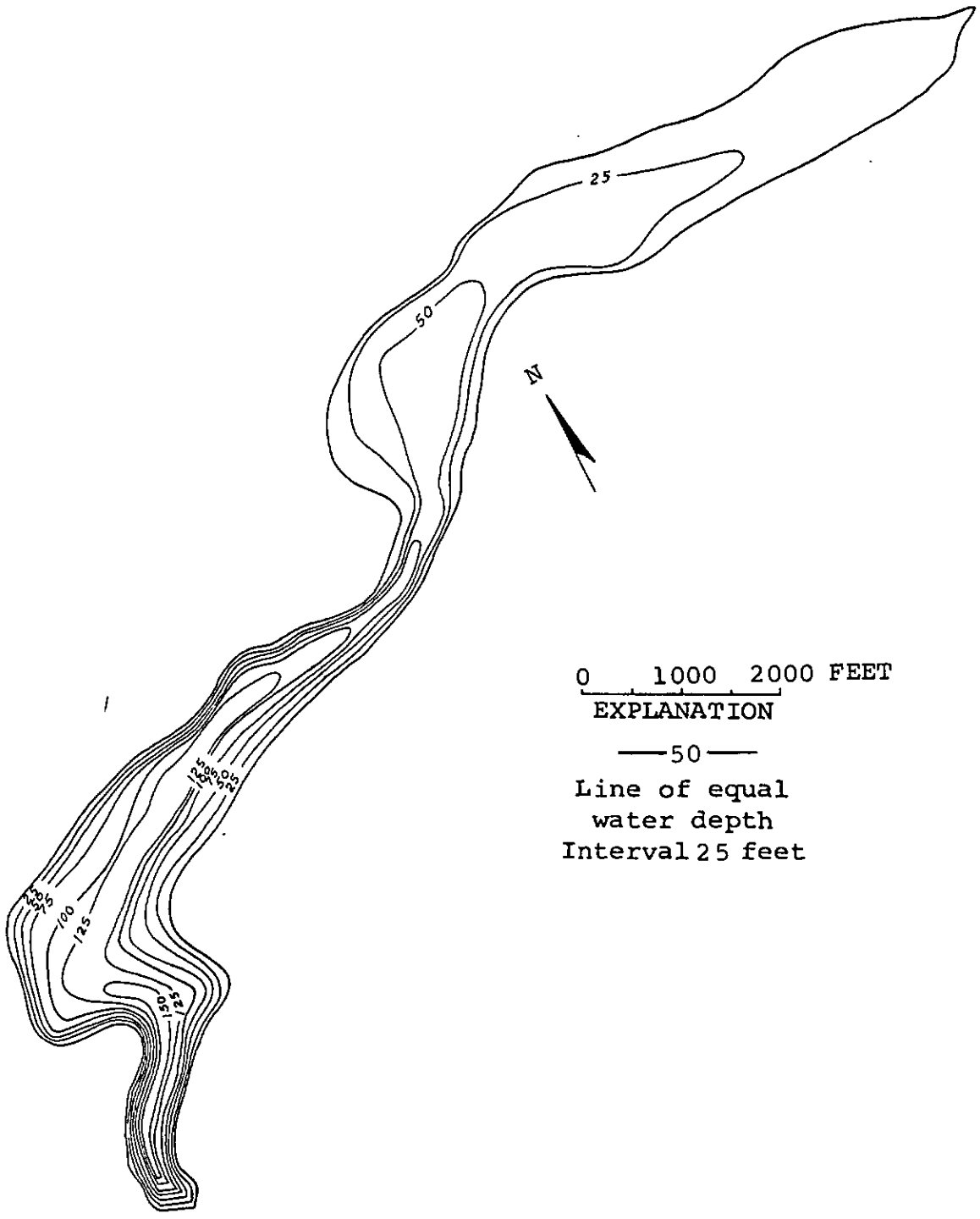
SAMPLE SITE	1		2	
DATE	9/ 4/74		9/ 4/74	
TIME	1510	1515	1600	1605
DEPTH (FT)	3.	125.	3.	66.
TOTAL NITRATE (N)	0.01	0.00	0.00	0.00
TOTAL NITRITE (N)	0.01	0.02	0.01	0.02
TOTAL AMMONIA (N)	0.13	0.27	0.16	0.25
TOTAL ORGANIC NITROGEN (N)	0.07	--	--	--
TOTAL PHOSPHORUS (P)	0.046	0.10	0.058	0.10
TOTAL ORTHOPHOSPHATE (P)	0.040	0.093	0.053	0.087
SPECIFIC CONDUCTANCE (MICROMHOS)	42	50	42	49
WATER TEMPERATURE (DEG C)	16.8	12.7	16.9	13.2
COLOR (PLATINUM-COBALT UNITS)	0	0	5	5
SECCHI-DISC VISIBILITY (FT)	1		1	
DISSOLVED OXYGEN	8.0	8.3	8.1	8.4

LAKE SHORELINE COVERED BY EMERSED PLANTS	LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

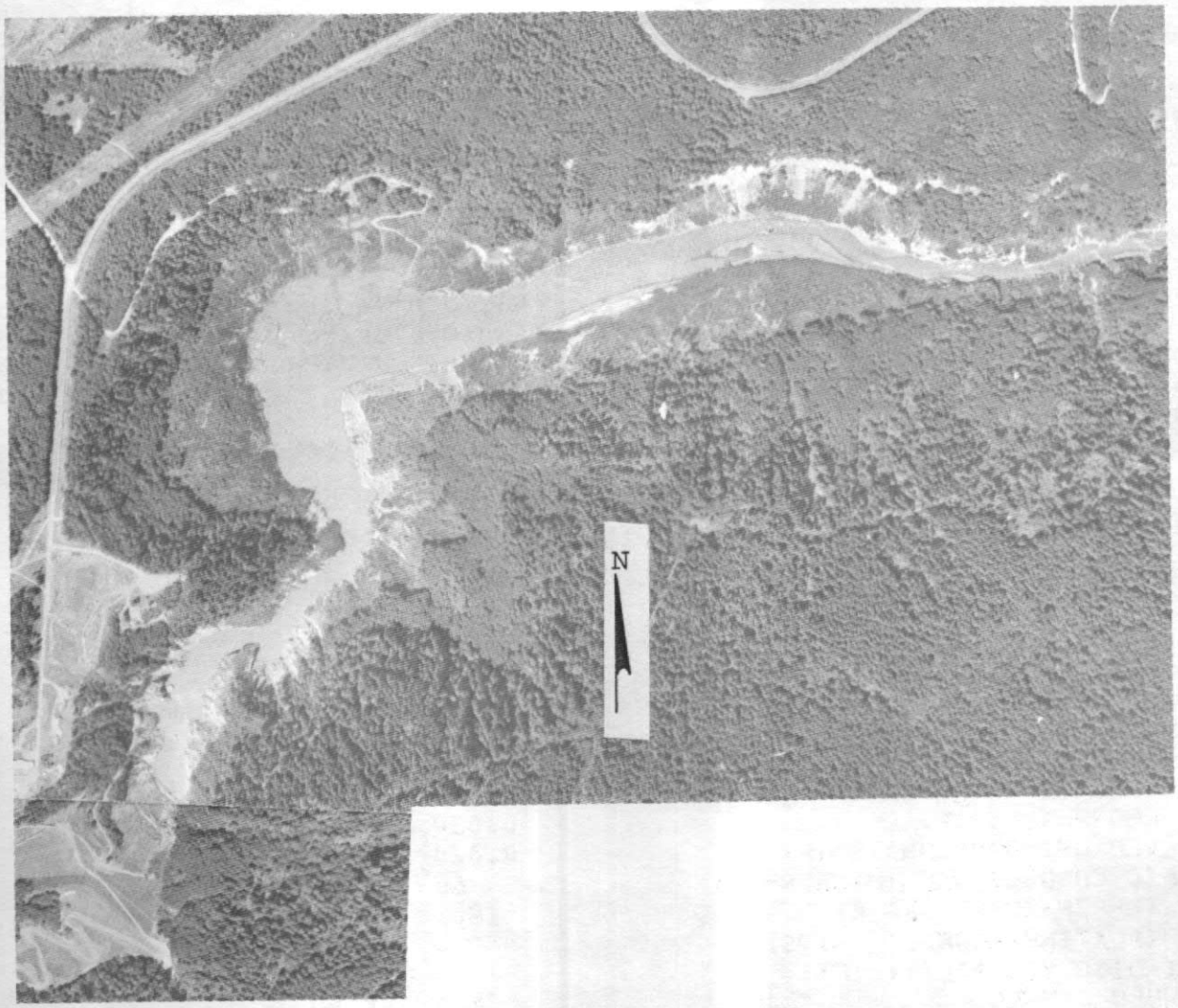
DATE	9/ 4/74
TIME	1430
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	1
FECAL COLIFORM, MAXIMUM (COL./100ML)	2
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

A FLOOD-CONTROL RESERVOIR FORMED BY AN EARTHFILL DAM ON THE WHITE RIVER. THE STORAGE IS NOT RETAINED BUT IS DISSIPATED AS SOON AS POSSIBLE AFTER A FLOOD. THE BOUNDARY LINE BETWEEN PIERCE AND KING COUNTIES RUNS DOWN THE CENTER LINE OF THE LAKE. IN THE SUMMER THE WATER IS TURBID FROM GLACIAL SILT CARRIED BY THE WHITE RIVER FROM MT RAINIER GLACIERS. THE DO WAS AT NEAR SATURATION THROUGHOUT THE ENTIRE WATER COLUMN. FLOATING AND SUBMERGED LOGS WERE OBSERVED ALONG THE SHORELINE.



Mud Mountain Lake, Pierce County. From
U.S. Geological Survey, April 2, 1974.



Mud Mountain Lake, Pierce County. June 2, 1970. Approx. scale 1:12,000.

OHOP LAKE — PIERCE COUNTY

LATITUDE 46°53' 6" LONGITUDE 122°16'38" T16N-R4E-10
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	17.3 SQ MI	RESIDENTIAL DEVELOPMENT	51 %
ALTITUDE	524. FT		
LAKE AREA	230. ACRES	NUMBER OF NEARSHORE HOMES	160
LAKE VOLUME	3800. ACRE-FT		
MEAN DEPTH	17. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	25. FT		
SHORELINE LENGTH	4.6 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	2.1	RESIDENTIAL SUBURBAN	1 %
DEVELOPMENT OF VOLUME	0.66	AGRICULTURAL	5 %
BOTTOM SLOPE	4.5 %	FOREST OR UNPRODUCTIVE	92 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	2 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

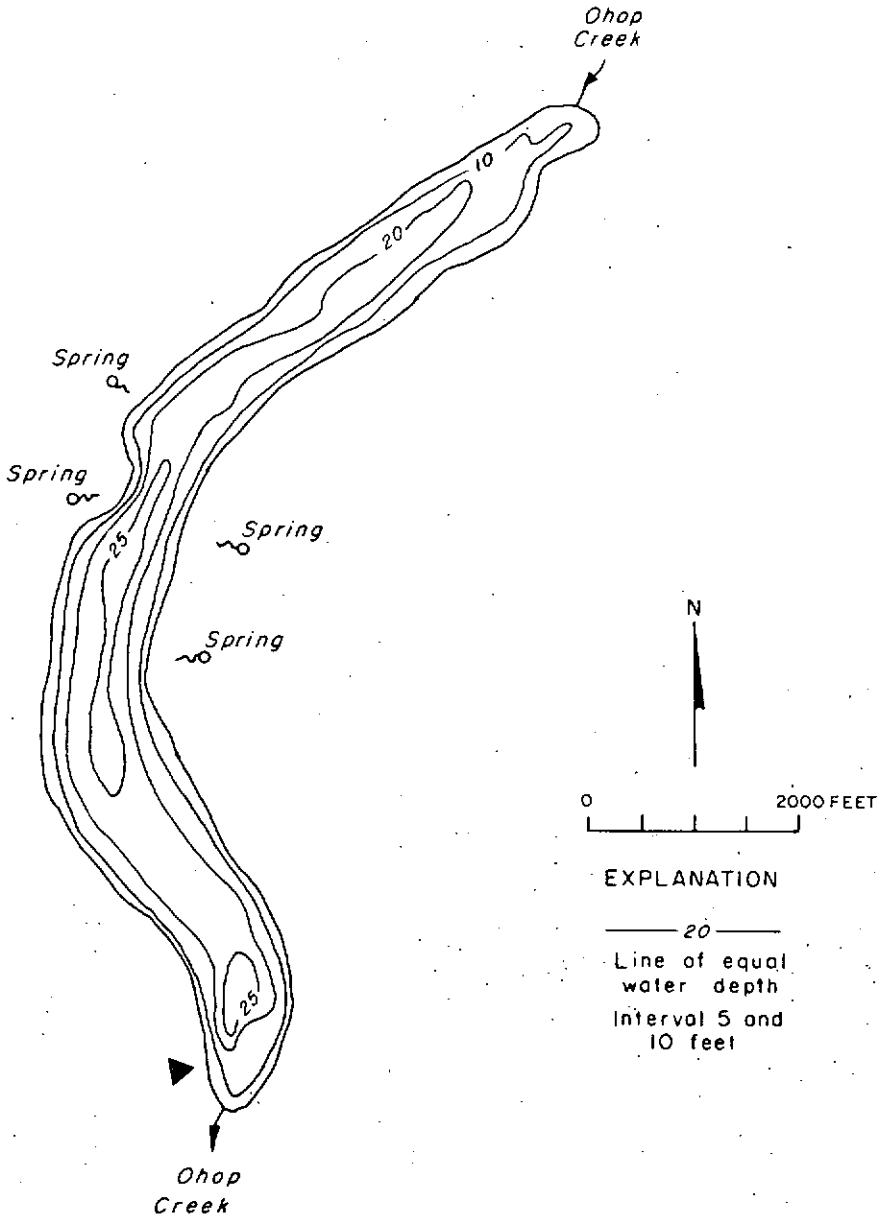
SAMPLE SITE	1	
DATE	7/ 6/71	
TIME	1400	1405
DEPTH (FT)	3.	16.
DISSOLVED NITRATE (N)	0.01	0.06
TOTAL NITRITE (N)	--	--
TOTAL AMMONIA (N)	0.12	0.22
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.030	0.040
DISSOLVED ORTHOPHOSPHATE (P)	0.020	0.020
SPECIFIC CONDUCTANCE (MICROMHOS)	65	74
WATER TEMPERATURE (DEG C)	18.1	12.5
COLOR (PLATINUM-COBALT UNITS)	--	--
SECCHI-DISC VISIBILITY (FT)	9	
DISSOLVED OXYGEN	8.9	1.1

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/26/74
TIME	1145
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	7
FECAL COLIFORM, MEAN (COL./100ML)	4

REMARKS

THE LAKE WAS FORMED IN A VALLEY BEHIND A DAM COMPOSED OF THE DELTAIC DEPOSITS OF LYNCH CREEK. THE LAKE IS FED BY OHOP CREEK. THE LITTORAL ZONE IS MARSHY NEAR THE INFLOW AND OUTFLOW. THE MAJORITY OF THE MACROPHYTES OCCURRED NEAR THE INLET AND OUTLET OF THE LAKE. SEVERAL SPRINGS FROM THE STEEP HILLSIDES FLOW TO THE LAKE. THE FLUSHING RATE OF THE LAKE APPEARS TO BE HIGH. THE LITTORAL BOTTOM IS MOSTLY MUCK OR SILTY MUCK. IN 1972 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON SEPTEMBER 10, 1971. WATER-LEVEL OBVERATIONS HAVE BEEN MADE BY THE U.S. GEOLOGICAL SURVEY SINCE 1960.



Ohop Lake, Pierce County. From Washington Department of Game, June 14, 1954.

Ohop Lake, Pierce County. May 18, 1970. Approx. scale 1:15,000.

RAPJOHN LAKE PIERCE COUNTY

LATITUDE 46*54'29" LONGITUDE 122*20'22" T17N-R4E-31
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.33 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	632. FT		
LAKE AREA	56. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	550. ACRE-FT		
MEAN DEPTH	10. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	18. FT		
SHORELINE LENGTH	1.1 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.1	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.55	AGRICULTURAL	18 %
BOTTOM SLOPE	1.0 %	FOREST OR UNPRODUCTIVE	75 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	7 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

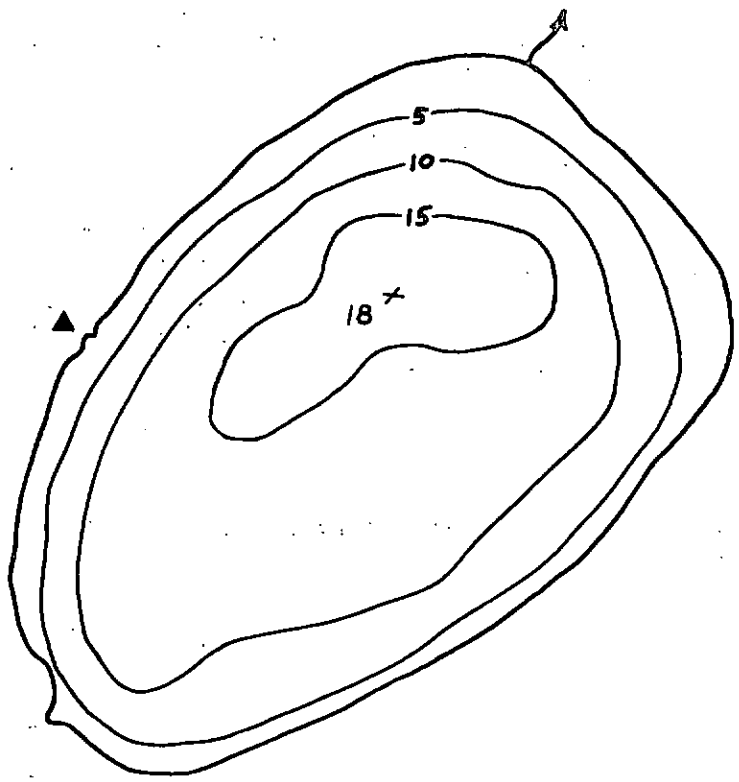
SAMPLE SITE	1	
DATE	8/11/73	
TIME	1330	1335
DEPTH (FT)	3.	10.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.01	0.01
TOTAL AMMONIA (N)	0.13	0.31
TOTAL ORGANIC NITROGEN (N)	0.87	0.60
TOTAL PHOSPHORUS (P)	0.024	0.052
TOTAL ORTHOPHOSPHATE (P)	0.011	0.017
SPECIFIC CONDUCTANCE (MICROMHOS)	80	85
WATER TEMPERATURE (DEG C)	21.0	17.8
COLOR (PLATINUM-COBALT UNITS)	55	70
SECCHI-DISC VISIBILITY (FT)	4	
DISSOLVED OXYGEN	8.7	0.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/11/73
TIME	1340
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	4
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

EMERSED PLANTS COVERED THE SHORELINE IN A THIN BAND AROUND THE LAKE. THE MUCK LITTORAL BOTTOM SUPPORTED A HEAVY COVER OF SUBMERSED PLANTS. THE WATER IS A TEA-BROWN COLOR.



N

0 500 1000 FEET

EXPLANATION

—10—
Line of equal
water depth
Interval 5 feet

Rapjohn Lake, Pierce County. From Washington Department of Game, date unknown.

Rapjohn Lake, Pierce County. April 3, 1973. Approx. scale 1:4800.

SEQUALITCHEW LAKE PIERCE COUNTY

LATITUDE 47* 6'46" LONGITUDE 122*36'54" T19N-R1E-24
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	34.2 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	206. FT		
LAKE AREA	91. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	470. ACRE-FT		
MEAN DEPTH	5. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	11. FT		
SHORELINE LENGTH	2.5 MI	RESIDENTIAL URBAN	15 %
SHORELINE CONFIGURATION	1.9	RESIDENTIAL SUBURBAN	4 %
DEVELOPMENT OF VOLUME	0.47	AGRICULTURAL	2 %
BOTTOM SLOPE	0.49 %	FOREST OR UNPRODUCTIVE	79 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	<1 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

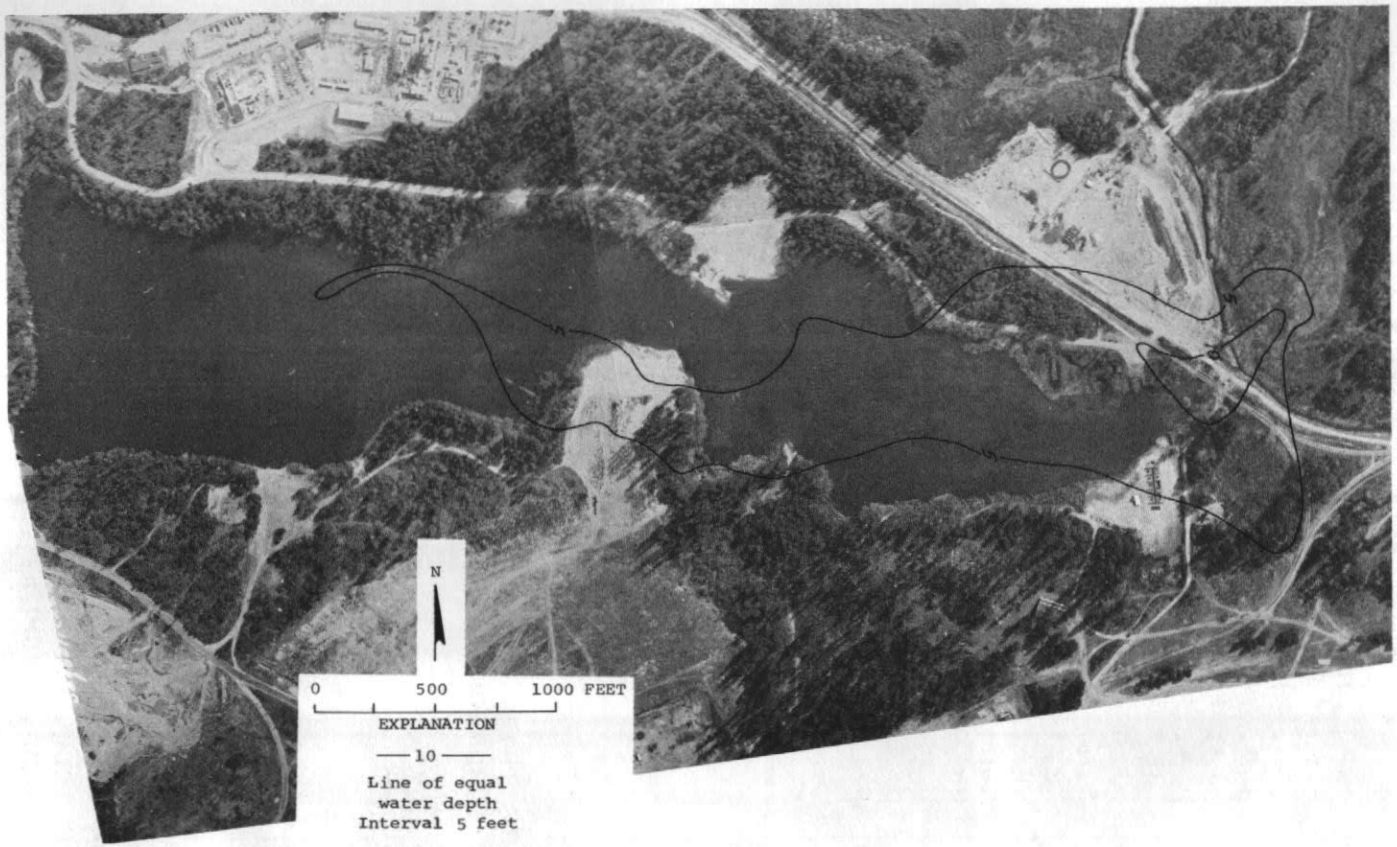
SAMPLE SITE	1	
DATE	8/10/73	
TIME	1030	1035
DEPTH (FT)	3.	6.
TOTAL NITRATE (N)	0.00	0.02
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.08	0.09
TOTAL ORGANIC NITROGEN (N)	0.38	0.41
TOTAL PHOSPHORUS (P)	0.021	0.022
TOTAL ORTHOPHOSPHATE (P)	0.009	0.006
SPECIFIC CONDUCTANCE (MICROMHOS)	113	112
WATER TEMPERATURE (DEG C)	21.8	21.8
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	8	
DISSOLVED OXYGEN	9.9	10.1

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/10/73
TIME	1040
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	1
FECAL COLIFORM, MAXIMUM (COL./100ML)	49
FECAL COLIFORM, MEAN (COL./100ML)	17

REMARKS

THE LAKE IS LOCATED ON THE FORT LEWIS MILITARY RESERVATION. LAND HAS BEEN EXCAVATED ON THE NORTH SIDE OF THE LAKE. EMERSED AND SUBMERSED PLANTS OCCURRED IN SCATTERED PATCHES. A LOW-DENSITY ALGAL BLOOM WAS OBSERVED.



Sequalitchew Lake, Pierce County. Bathymetric map from
U.S. Geological Survey, June 7, 1973.
Aerial photo, April 3, 1973.

SILVER LAKE PIERCE COUNTY

LATITUDE 46*52'53" LONGITUDE 122*21'55" T16N-R2E-12
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.83 SQ MI	RESIDENTIAL DEVELOPMENT	30 %
ALTITUDE	604. FT		
LAKE AREA	150. ACRES	NUMBER OF NEARSHORE HOMES	33
LAKE VOLUME	1800. ACRE-FT		
MEAN DEPTH	12. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	25. FT		
SHORELINE LENGTH	1.7 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.0	RESIDENTIAL SUBURBAN	1 %
DEVELOPMENT OF VOLUME	0.54	AGRICULTURAL	43 %
BOTTOM SLOPE	2.1 %	FOREST OR UNPRODUCTIVE	43 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	13 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

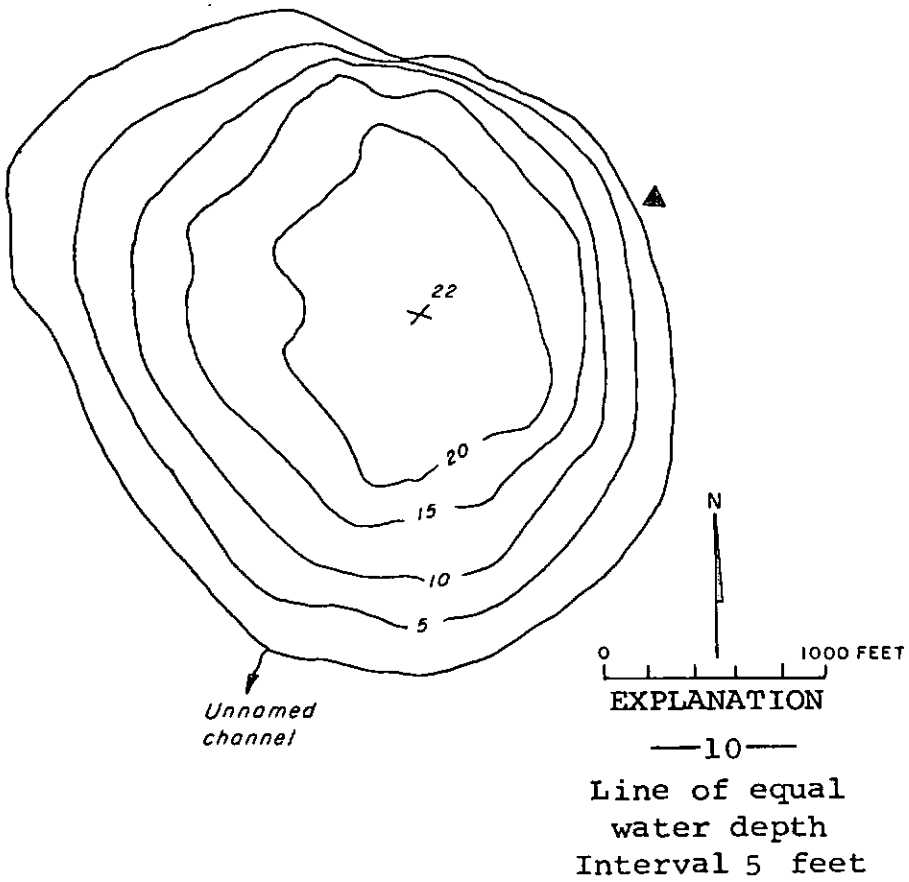
SAMPLE SITE	1	
DATE	7/ 1/71	
TIME	1300	1305
DEPTH (FT)	3.	16.
DISSOLVED NITRATE (N)	0.02	0.01
TOTAL NITRITE (N)	--	--
TOTAL AMMONIA (N)	0.26	0.20
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.020	0.030
DISSOLVED ORTHOPHOSPHATE (P)	0.010	0.030
SPECIFIC CONDUCTANCE (MICROMHOS)	78	89
WATER TEMPERATURE (DEG C)	18.5	13.1
COLOR (PLATINUM-COBALT UNITS)	--	--
SECCHI-DISC VISIBILITY (FT)	6	
DISSOLVED OXYGEN	9.9	0.3

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

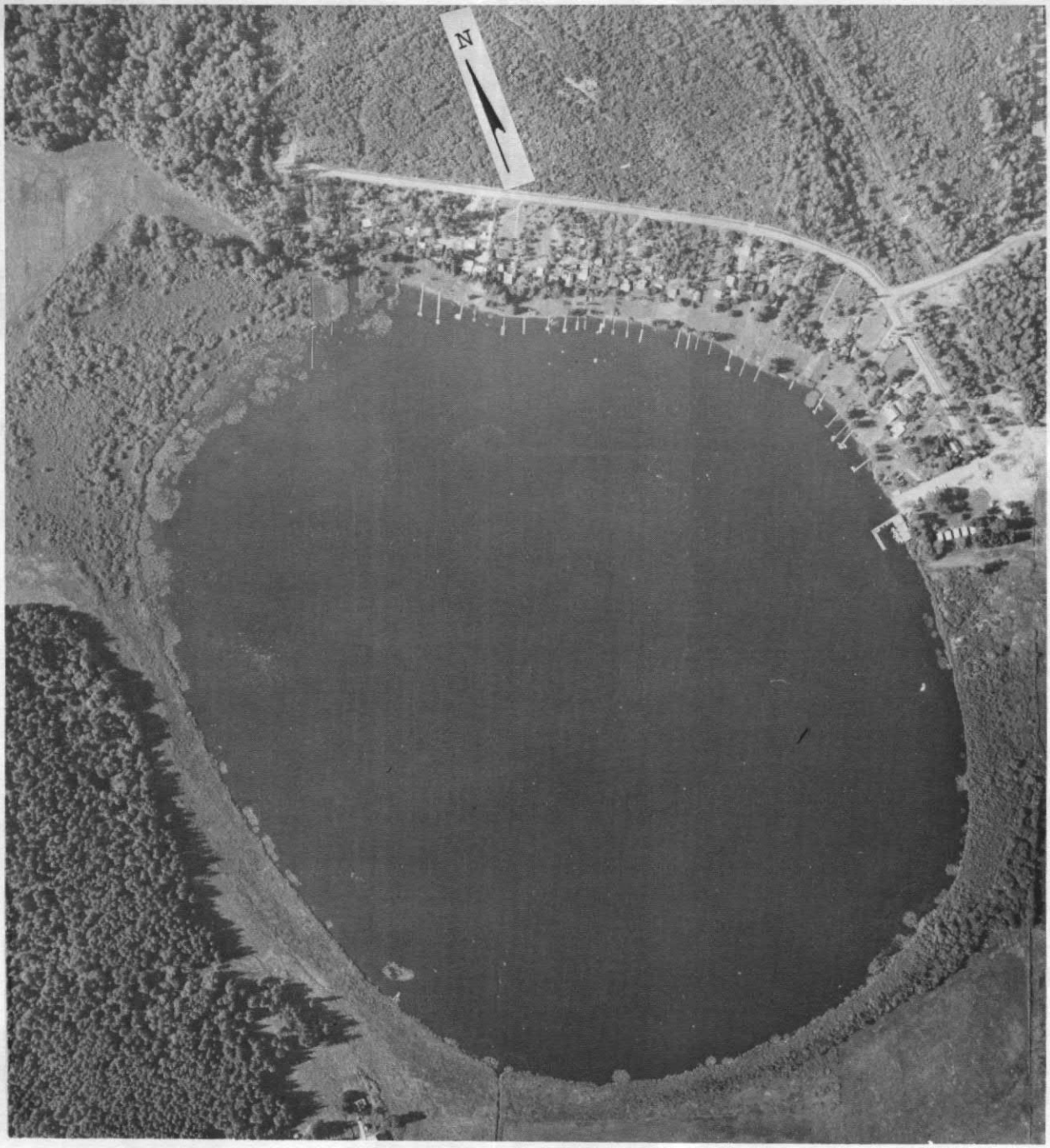
DATE	8/26/74
TIME	1115
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	1
FECAL COLIFORM, MAXIMUM (COL./100ML)	3
FECAL COLIFORM, MEAN (COL./100ML)	2

REMARKS

EMERSED PLANTS COVERED THE SHORELINE IN BOTH SCATTERED DENSE BEDS AND IN A THIN MARGIN AROUND THE SHORE. THE MUCK LITTORAL BOTTOM SUPPORTED A HEAVY GROWTH OF SUBMERSED PLANTS (PONDWEED AND ELODEA). ABOUT 70 PERCENT OF THE SHORELINE BORDERS WETLAND OR MARSH. AN ALGAL BLOOM WAS OBSERVED. IN 1971 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON AUGUST 12, 1971.



Silver Lake, Pierce County. From Washington Department of Game, date unknown.



Silver Lake, Pierce County. July 14, 1971. Approx. scale 1:7000.

SPANAWAY LAKE PIERCE COUNTY

LATITUDE 47* 7'11" LONGITUDE 122*26'45" T19N-R3E-20
CHAMBERS CREEK BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	17.0 SQ MI	RESIDENTIAL DEVELOPMENT	80 %
ALTITUDE	320. FT		
LAKE AREA	280. ACRES	NUMBER OF NEARSHORE HOMES	220
LAKE VOLUME	4600. ACRE-FT		
MEAN DEPTH	16. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	28. FT		
SHORELINE LENGTH	4.4 MI	RESIDENTIAL URBAN	5 %
SHORELINE CONFIGURATION	1.9	RESIDENTIAL SUBURBAN	38 %
DEVELOPMENT OF VOLUME	0.57	AGRICULTURAL	0 %
BOTTOM SLOPE	0.71 %	FOREST OR UNPRODUCTIVE	54 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	3 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

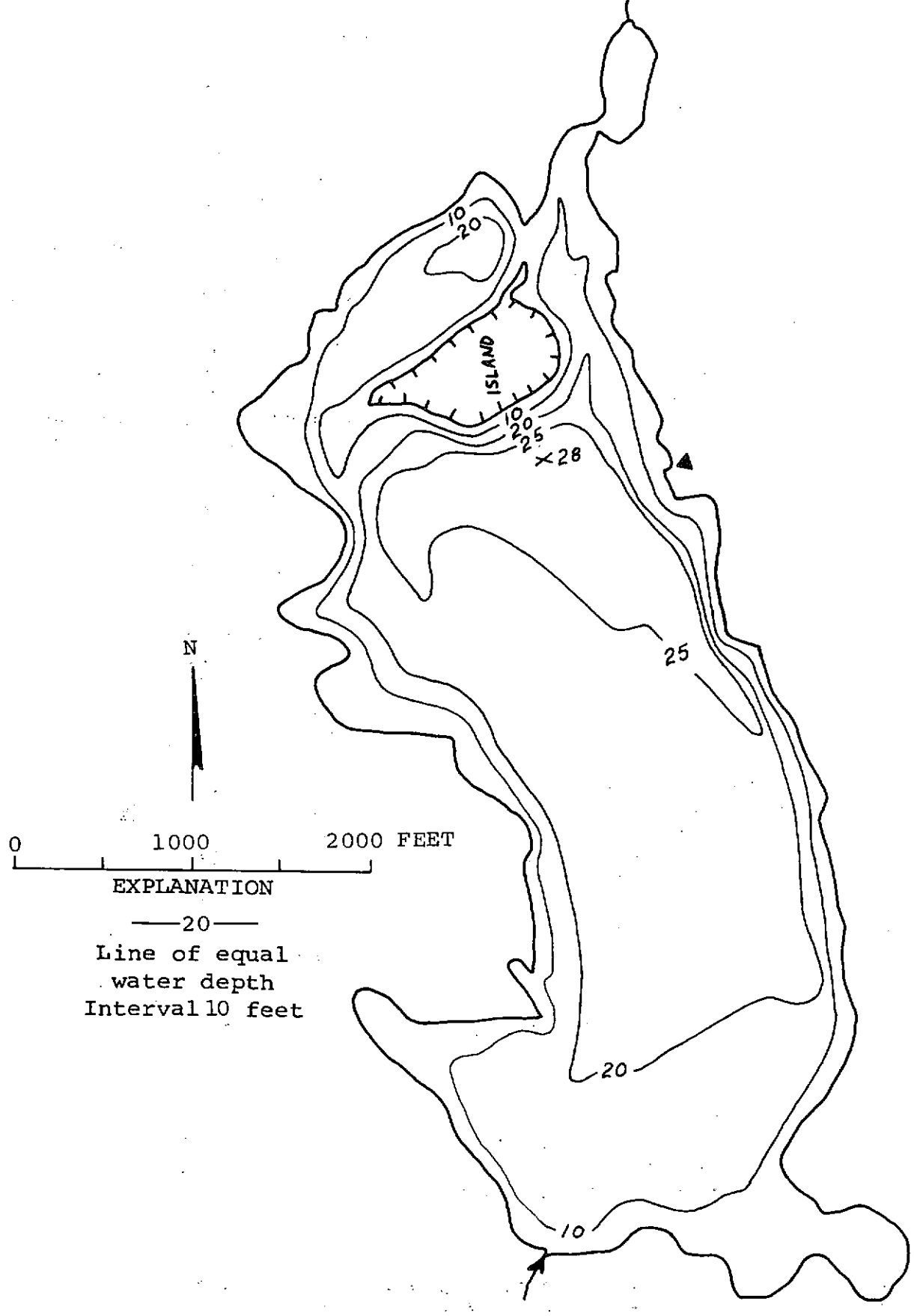
SAMPLE SITE	1	
DATE	6/18/73	
TIME	930	940
DEPTH (FT)	3.	21.
TOTAL NITRATE (N)	0.04	0.01
TOTAL NITRITE (N)	0.00	0.01
TOTAL AMMONIA (N)	0.11	1.1
TOTAL ORGANIC NITROGEN (N)	0.08	0.00
TOTAL PHOSPHORUS (P)	0.028	0.25
TOTAL ORTHOPHOSPHATE (P)	0.001	0.070
SPECIFIC CONDUCTANCE (MICROMHOS)	93	116
WATER TEMPERATURE (DEG C)	16.3	11.0
COLOR (PLATINUM-COBALT UNITS)	5	50
SECCHI-DISC VISIBILITY (FT)		
DISSOLVED OXYGEN	10.4	11.1

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

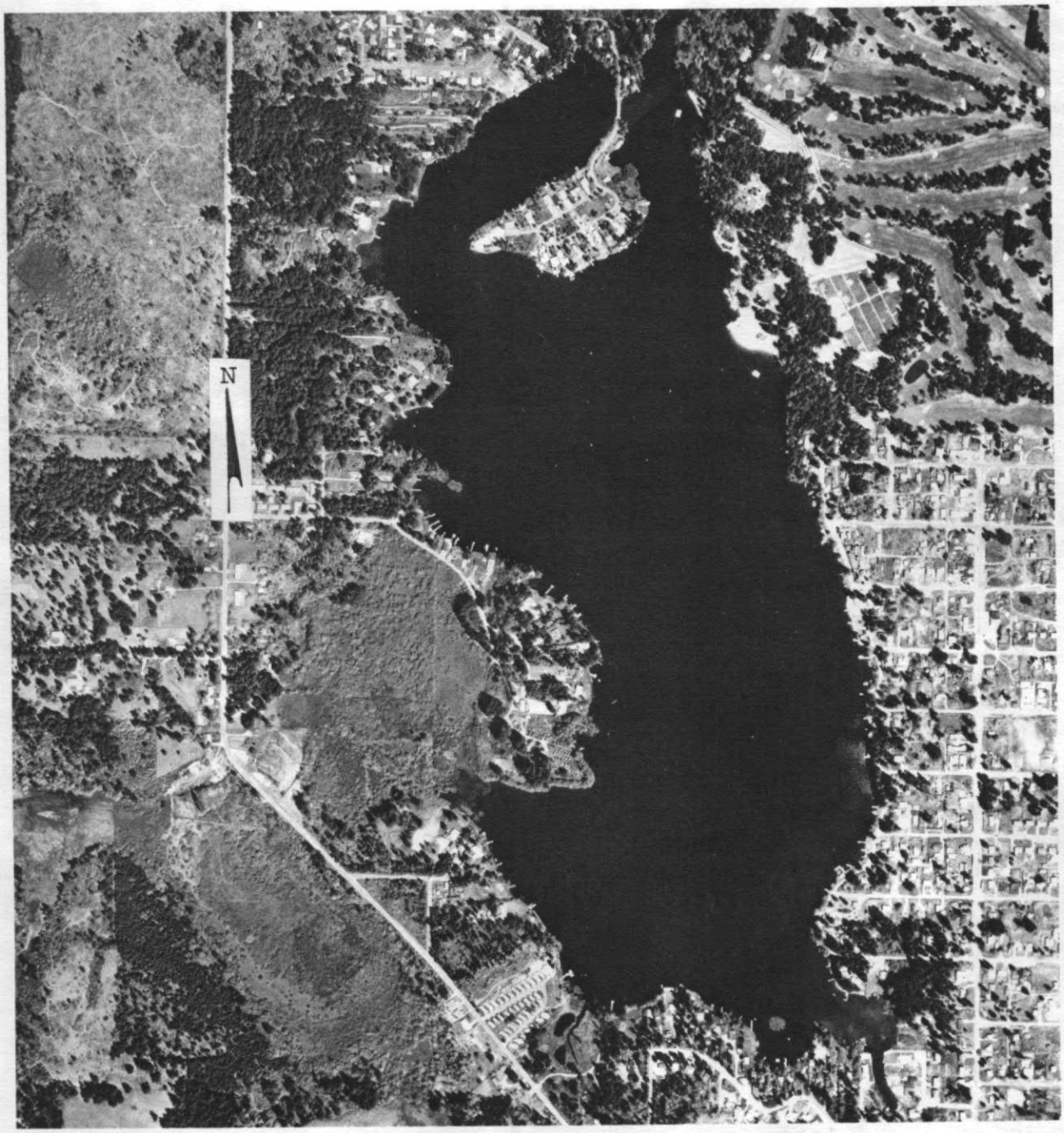
DATE	6/18/73
TIME	1000
NUMBER OF FECAL COLIFORM SAMPLES	5
FECAL COLIFORM, MINIMUM (COL./100ML)	1
FECAL COLIFORM, MAXIMUM (COL./100ML)	12
FECAL COLIFORM, MEAN (COL./100ML)	4

REMARKS

THE LAKE IS FED BY A LARGE MARSH AND DRAINS VIA SPANAWAY CREEK AND CLOVER CREEK TO STEILACOOM LAKE. APPROXIMATELY 18 PERCENT OF THE SHORELINE IS COUNTY PARK. THE LAKE RECEIVES HEAVY RECREATIONAL USE. A LOW-DENSITY ALGAL BLOOM WAS OBSERVED. THE LITTORAL BOTTOM IS MOSTLY GRAVEL AND COBBLE. IN 1973 THE U. S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON AUGUST 6, 1973.



Spanaway Lake, Pierce County. From Washington Department of Game, February 2, 1950.



Spanaway Lake, Pierce County. May 15, 1970. Approx. scale 1:12,000.

STANSBERRY LAKE PIERCE COUNTY

LATITUDE 47*23' 4" LONGITUDE 122*43'37" T22N-R1E-19
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.39 SQ MI	RESIDENTIAL DEVELOPMENT	70 %
ALTITUDE	238. FT		
LAKE AREA	25. ACRES	NUMBER OF NEARSHORE HOMES	12
LAKE VOLUME	200. ACRE-FT		
MEAN DEPTH	8. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	16. FT		
SHORELINE LENGTH	1.0 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.4	RESIDENTIAL SUBURBAN	1 %
DEVELOPMENT OF VOLUME	0.50	AGRICULTURAL	0 %
BOTTOM SLOPE	1.4 %	FOREST OR UNPRODUCTIVE	89 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	10 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

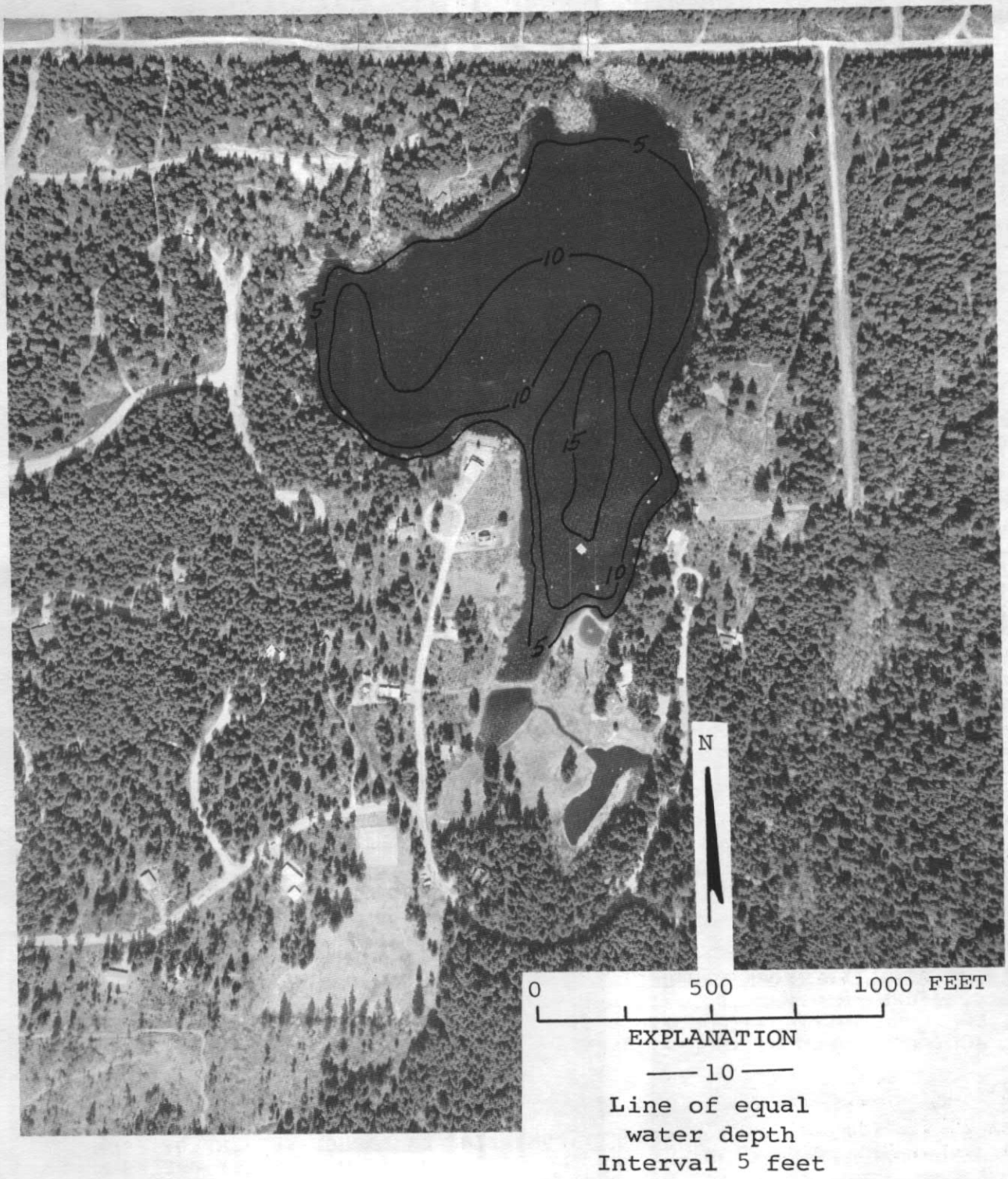
SAMPLE SITE	1	
DATE	8/10/73	
TIME	1550	1555
DEPTH (FT)	3.	10.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.06	0.05
TOTAL ORGANIC NITROGEN (N)	0.15	0.15
TOTAL PHOSPHORUS (P)	0.015	0.019
TOTAL ORTHOPHOSPHATE (P)	0.005	0.005
SPECIFIC CONDUCTANCE (MICROMHOS)	27	27
WATER TEMPERATURE (DEG C)	22.8	21.3
COLOR (PLATINUM-COBALT UNITS)	10	10
SECCHI-DISC VISIBILITY (FT)	10	
DISSOLVED OXYGEN	8.4	8.6

LAKE SHORELINE COVERED BY EMERSED PLANTS	1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/10/73
TIME	1600
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

A RESIDENTIAL AND RECREATIONAL DEVELOPMENT ENCOMPASS THE LAKE AND NEARSHORE ENVIRONS.



Stansberry Lake, Pierce County. Bathymetric map from U.S. Geological Survey, June 22, 1973. Aerial photo, April 3, 1973.

STEILACOOM LAKE PIERCE COUNTY

LATITUDE 47°10'40" LONGITUDE 122°32' 4" T20N-R2E-34
CHAMBERS CREEK BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	89.4 SQ MI	RESIDENTIAL DEVELOPMENT	100 %
ALTITUDE	210. FT		
LAKE AREA	320. ACRES	NUMBER OF NEARSHORE HOMES	285
LAKE VOLUME	3500. ACRE-FT		
MEAN DEPTH	11. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	20. FT		
SHORELINE LENGTH	5.7 MI	RESIDENTIAL URBAN	28 %
SHORELINE CONFIGURATION	2.3	RESIDENTIAL SUBURBAN	27 %
DEVELOPMENT OF VOLUME	0.56	AGRICULTURAL	2 %
BOTTOM SLOPE	2.8 %	FOREST OR UNPRODUCTIVE	42 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	1 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

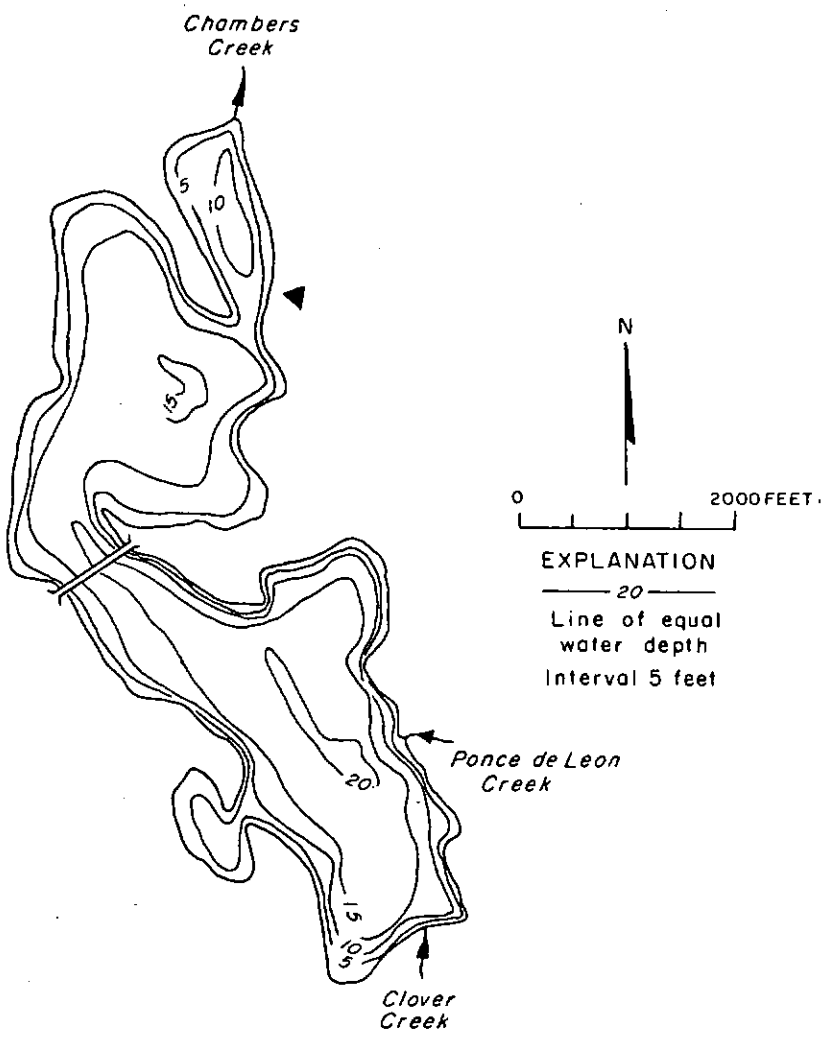
SAMPLE SITE	1	
DATE	7/23/71	
TIME	1030	1035
DEPTH (FT)	3.	16.
DISSOLVED NITRATE (N)	0.62	0.87
TOTAL NITRITE (N)	--	--
TOTAL AMMONIA (N)	0.05	0.12
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.020	0.030
DISSOLVED ORTHOPHOSPHATE (P)	0.010	0.010
SPECIFIC CONDUCTANCE (MICROMHOS)	108	132
WATER TEMPERATURE (DEG C)	23.0	13.0
COLOR (PLATINUM-COBALT UNITS)	--	--
SECCHI-DISC VISIBILITY (FT)	10	
DISSOLVED OXYGEN	10.1	10.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	1- 10 %
LAKE SURFACE COVERED BY EMERSED PLANTS	NONE OR <1 %

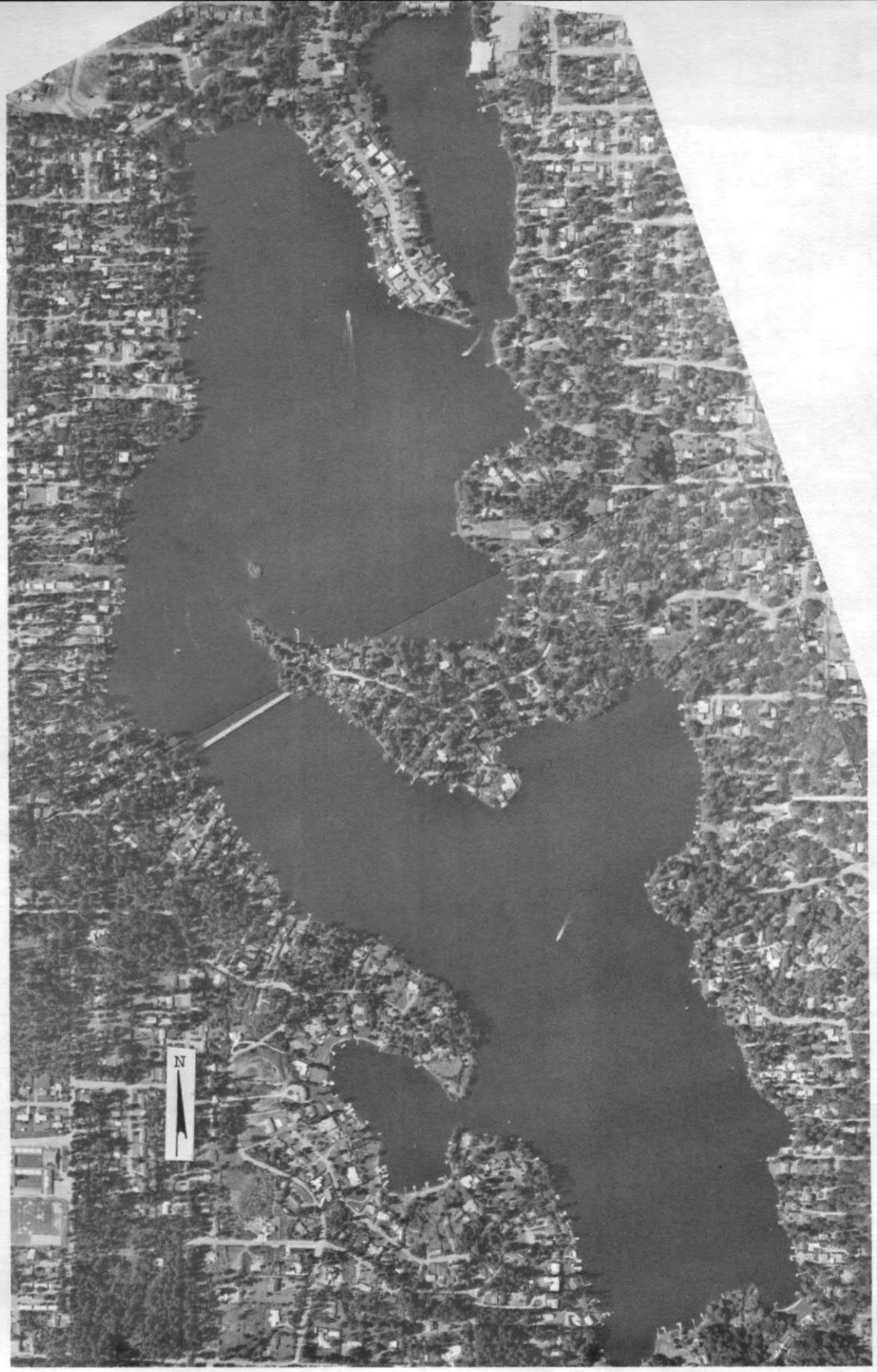
DATE	8/21/74
TIME	1400
NUMBER OF FECAL COLIFORM SAMPLES	4
FECAL COLIFORM, MINIMUM (COL./100ML)	1
FECAL COLIFORM, MAXIMUM (COL./100ML)	33
FECAL COLIFORM, MEAN (COL./100ML)	14

REMARKS

AN URBAN LAKE LOCATED SOUTHEAST OF TACOMA. THE LAKE RECEIVES INFLOW FROM PONCE DE LEON CREEK (PERENNIAL) AND CLOVER CREEK. BOTH OF THESE CREEKS DRAIN A POPULATED URBAN AREA WHICH IS WITHOUT SEWERS. THE DEPARTMENT OF ECOLOGY HAS MADE STUDIES CONCERNING THE UNDERGROUND DISPOSAL OF SEWAGE IN THE STEILACOOM LAKE DRAINAGE BASIN. THE LITTORAL BOTTOM OF GRAVEL WITH LOCAL AREAS OF SILT AND MUCK SUPPORTED A SPARSE GROWTH OF AQUATIC MACROPHYTES. HOWEVER, THE LAKE HAS BEEN TREATED WITH ALGACIDES AND HERBICIDES TO CONTROL AQUATIC PLANT GROWTH. THE LAKE HAS A LARGE WATERFOWL POPULATION. IN 1971 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON AUGUST 10, 1971.



Steilacoom Lake, Pierce County. From Washington Department of Game, June 2, 1950.



Steilacoom Lake, Pierce County. July 14, 1971. Approx. scale 1:11,000.

STIDHAM LAKE PIERCE COUNTY

LATITUDE 46°57' 8" LONGITUDE 122°16'36" T17N-R4E-22
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.12 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	655. FT		
LAKE AREA	10. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	120. ACRE-FT		
MEAN DEPTH	12. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	22. FT		
SHORELINE LENGTH	0.50 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.1	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.56	AGRICULTURAL	19 %
BOTTOM SLOPE	3.0 %	FOREST OR UNPRODUCTIVE	68 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	13 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

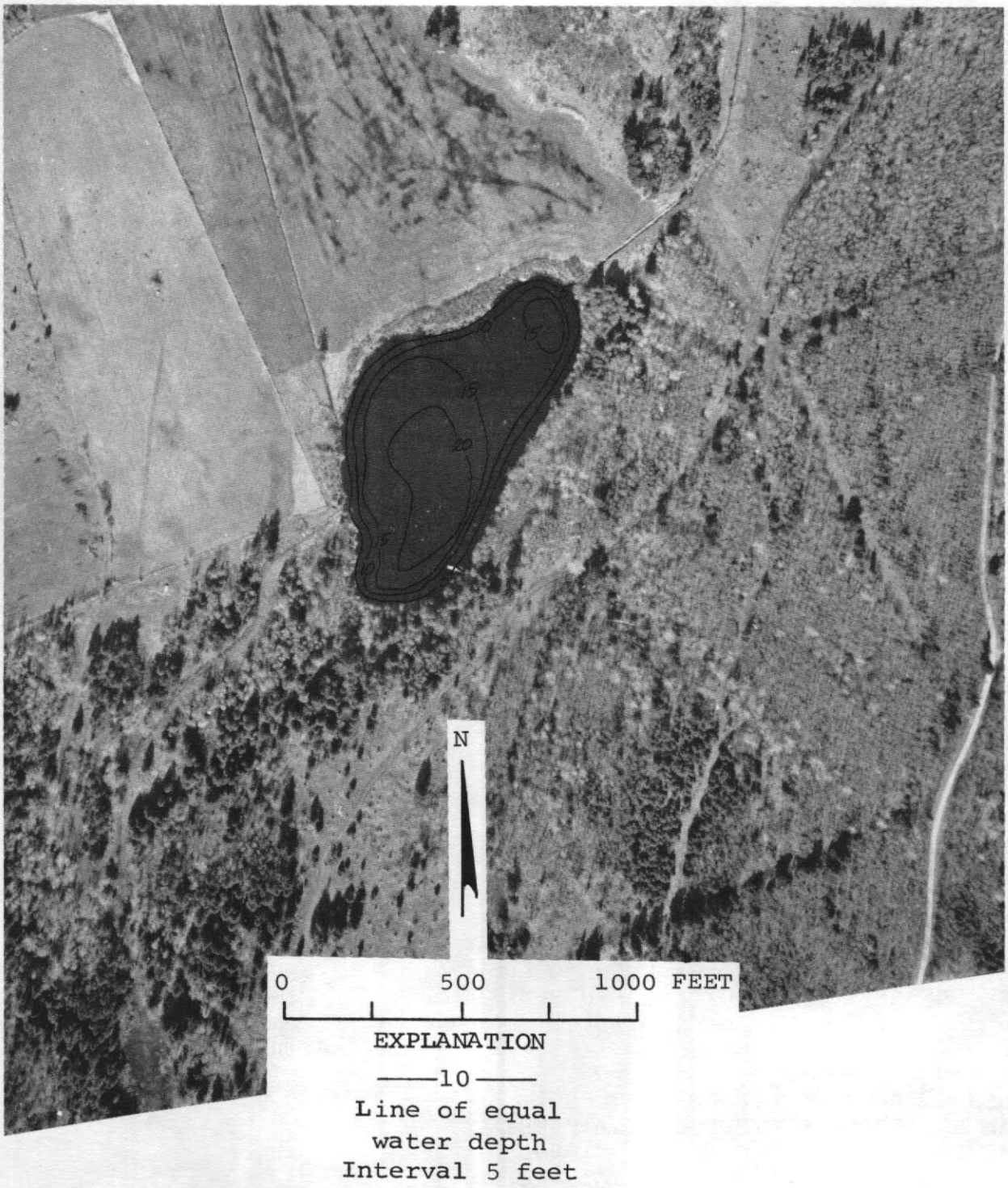
SAMPLE SITE	1	
DATE	8/10/73	
TIME	1540	1545
DEPTH (FT)	3.	16.
TOTAL NITRATE (N)	0.00	0.00
TOTAL NITRITE (N)	0.01	0.01
TOTAL AMMONIA (N)	0.23	1.4
TOTAL ORGANIC NITROGEN (N)	0.87	0.60
TOTAL PHOSPHORUS (P)	0.054	0.19
TOTAL ORTHOPHOSPHATE (P)	0.017	0.15
SPECIFIC CONDUCTANCE (MICROMHOS)	51	62
WATER TEMPERATURE (DEG C)	20.0	6.0
COLOR (PLATINUM-COBALT UNITS)	125	125
SECCHI-DISC VISIBILITY (FT)	2	
DISSOLVED OXYGEN	6.1	0.2

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/10/73
TIME	1550
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	2
FECAL COLIFORM, MAXIMUM (COL./100ML)	8
FECAL COLIFORM, MEAN (COL./100ML)	5

REMARKS

EMERSED PLANTS COVERED THE MARSHY SHORELINE. THE WATER IS A DARK BROWN COLOR. THE LITTORAL BOTTOM IS MOSTLY MUCK. HYDROGEN SULFIDE WAS DETECTED IN THE HYPOLIMNION.



Stidham Lake, Pierce County. Bathymetric map from U.S. Geological Survey, June 20, 1973. Aerial photo, April 3, 1973.

SUMMIT LAKE PIERCE COUNTY

LATITUDE 47* 2'15" LONGITUDE 121*49'50" T18N-R8E-19
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.10 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	5440. FT		
LAKE AREA	20. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	1500. ACRE-FT		
MEAN DEPTH	76. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	190. FT		
SHORELINE LENGTH	0.69 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.1	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.40	AGRICULTURAL	0 %
BOTTOM SLOPE	18. %	FOREST OR UNPRODUCTIVE	69 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	31 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

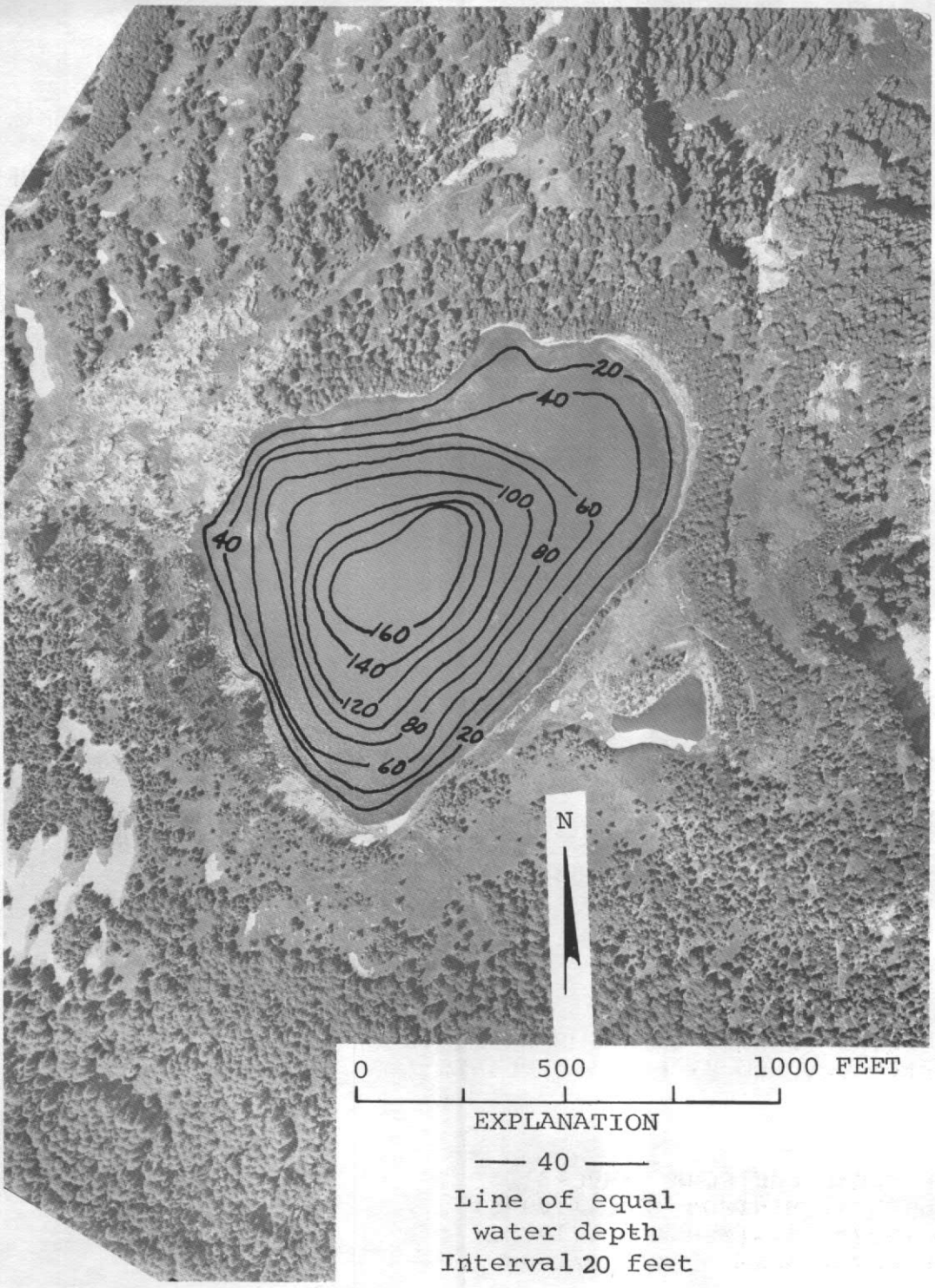
SAMPLE SITE	1	
DATE	7/17/73	
TIME	1530	1540
DEPTH (FT)	3.	151.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.02	0.02
TOTAL ORGANIC NITROGEN (N)	0.00	0.01
TOTAL PHOSPHORUS (P)	0.006	0.009
TOTAL ORTHOPHOSPHATE (P)	0.001	0.001
SPECIFIC CONDUCTANCE (MICROMHOS)	4	4
WATER TEMPERATURE (DEG C)	13.7	4.3
COLOR (PLATINUM-COBALT UNITS)	0	0
SECCHI-DISC VISIBILITY (FT)	79	
DISSOLVED OXYGEN	8.4	9.1

LAKE SHORELINE COVERED BY EMERSED PLANTS LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS NONE OR <1 %

DATE	7/17/73
TIME	1540
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

THE WATER WAS EXTREMELY TRANSPARENT AS INDICATED BY A SECCHI-DISC READING OF 80 FEET. THE WATER COLOR WAS A BRIGHT BLUE. THE LAKE APPEARS TO BE AN OLD CRATER.



Summit Lake, Pierce County. Bathymetric map from U.S. Geological Survey, September 1, 1973. Aerial photo, July 14, 1973.

SURPRISE (18N-7E-25) LAKE PIERCE COUNTY

LATITUDE 47° 1'21" LONGITUDE 121°51'35" T18N-R7E-25
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.30 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	4450. FT		
LAKE AREA	7. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	41. ACRE-FT		
MEAN DEPTH	6. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	14. FT		
SHORELINE LENGTH	0.44 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.42	AGRICULTURAL	0 %
BOTTOM SLOPE	2.3 %	FOREST OR UNPRODUCTIVE	96 %
BASIN GEOLOGY	IGNEOUS	LAKE SURFACE	4 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

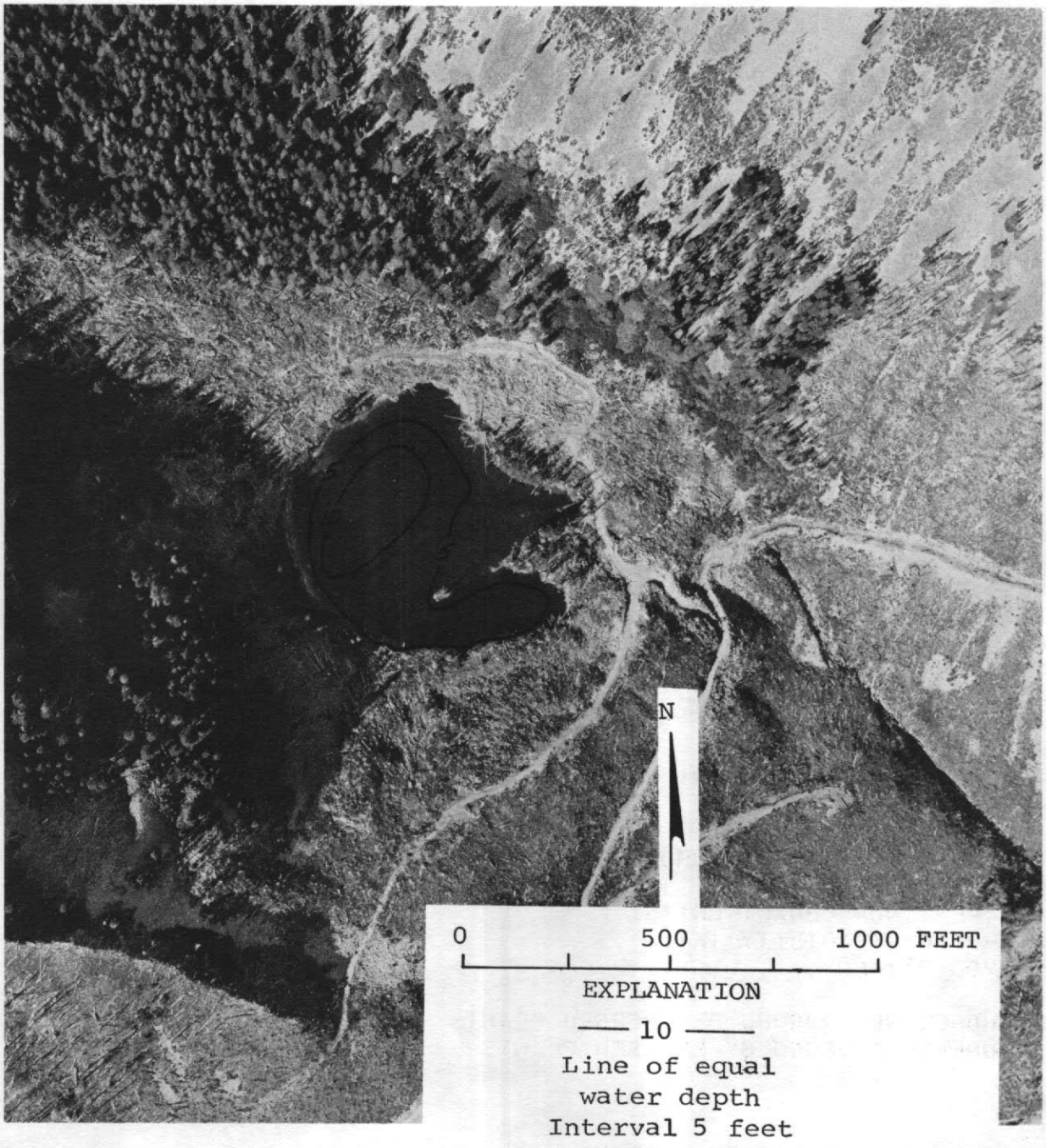
SAMPLE SITE	1	
DATE	8/11/73	
TIME	1915	1920
DEPTH (FT)	3.	6.
TOTAL NITRATE (N)	0.01	--
TOTAL NITRITE (N)	0.00	--
TOTAL AMMONIA (N)	0.04	--
TOTAL ORGANIC NITROGEN (N)	0.07	--
TOTAL PHOSPHORUS (P)	0.004	--
TOTAL ORTHOPHOSPHATE (P)	0.003	--
SPECIFIC CONDUCTANCE (MICROMHOS)	11	--
WATER TEMPERATURE (DEG C)	19.7	18.0
COLOR (PLATINUM-COBALT UNITS)	15	--
SECCHI-DISC VISIBILITY (FT)	> 7	
DISSOLVED OXYGEN	8.0	8.0

LAKE SHORELINE COVERED BY EMERSED PLANTS LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS NONE OR <1 %

DATE	8/11/73
TIME	1925
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

A VERY SHALLOW HIGH-ALTITUDE LAKE. THE SHORE ENVIRONS AND MUCH OF THE SURROUNDING HILLS HAVE BEEN LOGGED. FLOATING AND SUBMERGED LOGS COVERED THE SHORELINE LOCALLY.



Surprise (18N-7E-25) Lake, Pierce County. Bathymetric map from U.S. Geological Survey, September 2, 1973.
Aerial photo, September 27, 1973.

SURPRISE (20N-4E-4) LAKE PIERCE COUNTY

LATITUDE 47°14'40" LONGITUDE 122°18' 9" T20N-R4E-4
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.70 SQ MI	RESIDENTIAL DEVELOPMENT	50 %
ALTITUDE	315. FT		
LAKE AREA	32. ACRES	NUMBER OF NEARSHORE HOMES	42
LAKE VOLUME	510. ACRE-FT		
MEAN DEPTH	16. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	40. FT		
SHORELINE LENGTH	0.95 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	15 %
DEVELOPMENT OF VOLUME	0.40	AGRICULTURAL	62 %
BOTTOM SLOPE	3.0 %	FOREST OR UNPRODUCTIVE	16 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	7 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

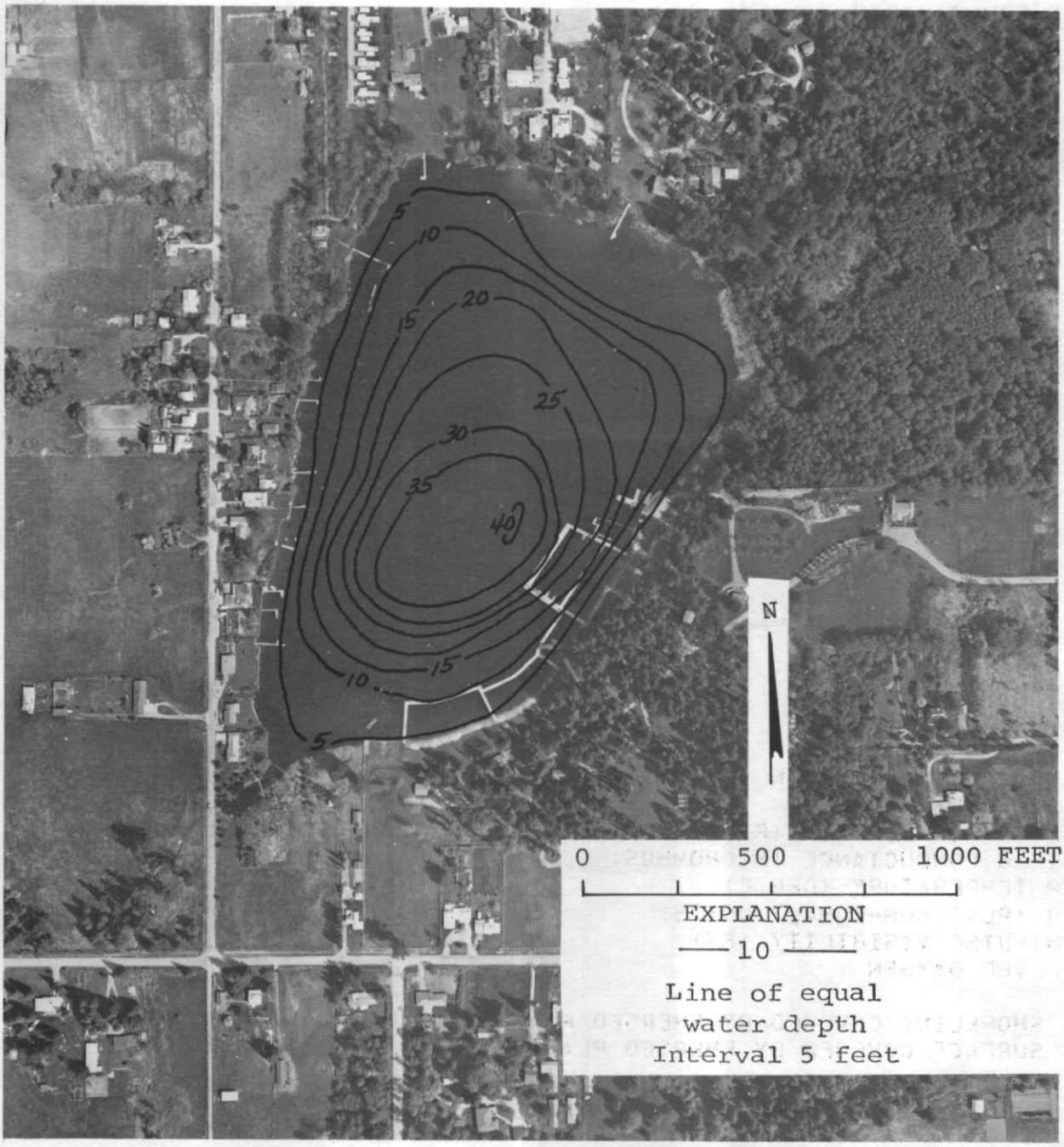
SAMPLE SITE	1	
DATE	8/ 8/73	
TIME	1730	1735
DEPTH (FT)	3.	30.
TOTAL NITRATE (N)	0.01	0.02
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.10	0.58
TOTAL ORGANIC NITROGEN (N)	0.35	0.28
TOTAL PHOSPHORUS (P)	0.011	0.057
TOTAL ORTHOPHOSPHATE (P)	0.003	0.028
SPECIFIC CONDUCTANCE (MICROMHOS)	96	101
WATER TEMPERATURE (DEG C)	21.9	8.0
COLOR (PLATINUM-COBALT UNITS)	20	77
SECCHI-DISC VISIBILITY (FT)	19	
DISSOLVED OXYGEN	8.3	0.1

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/ 8/73
TIME	1745
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	5
FECAL COLIFORM, MAXIMUM (COL./100ML)	30
FECAL COLIFORM, MEAN (COL./100ML)	16

REMARKS

THE LAKE IS LOCATED SOUTHEAST OF TACOMA AND RECEIVES HEAVY RECREATIONAL USE. EMERSED PLANTS WERE SCATTERED IN PATCHES.



Surprise (20N-4E-4) Lake, Pierce County. Bathymetric map from U.S. Geological Survey, June 15, 1973. Aerial photo, April 29, 1973.

TANWAX LAKE PIERCE COUNTY

LATITUDE 46°56'40" LONGITUDE 122°16'26" T17N-R4E-23
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	4.08 SQ MI	RESIDENTIAL DEVELOPMENT	70 %
ALTITUDE	600. FT		
LAKE AREA	170. ACRES	NUMBER OF NEARSHORE HOMES	70
LAKE VOLUME	3300. ACRE-FT		
MEAN DEPTH	20. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	30. FT		
SHORELINE LENGTH	2.8 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.5	RESIDENTIAL SUBURBAN	6 %
DEVELOPMENT OF VOLUME	0.65	AGRICULTURAL	24 %
BOTTOM SLOPE	5.1 %	FOREST OR UNPRODUCTIVE	62 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	8 %
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

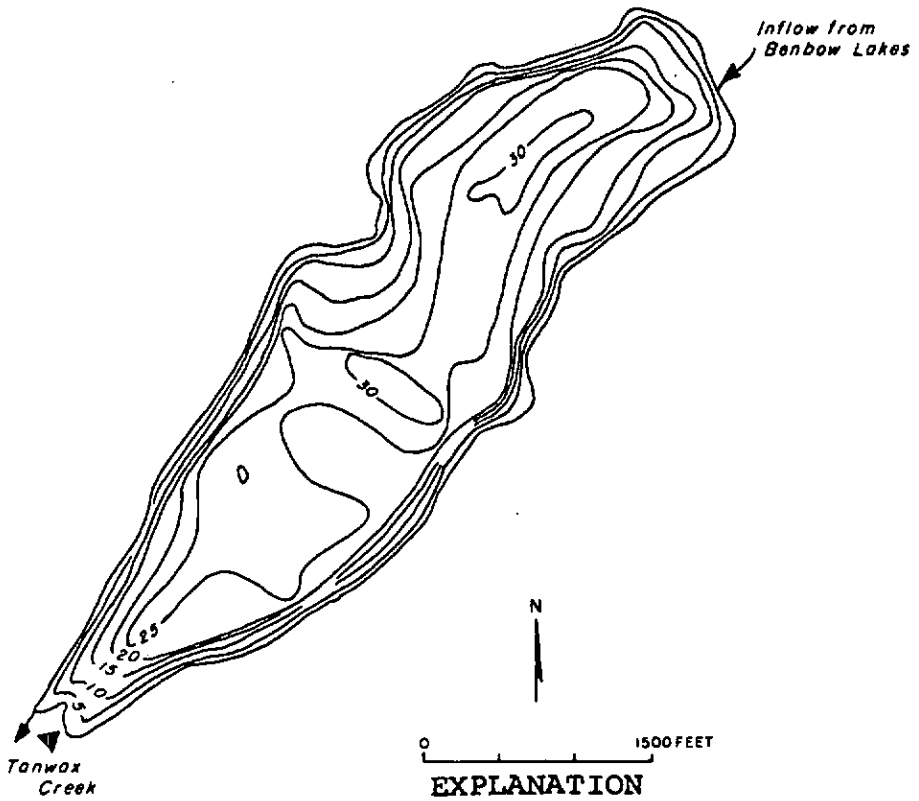
SAMPLE SITE	1	
DATE	7/ 6/71	
TIME	1100	1120
DEPTH (FT)	3.	20.
DISSOLVED NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	--	--
TOTAL AMMONIA (N)	0.09	0.27
TOTAL ORGANIC NITROGEN (N)	--	--
TOTAL PHOSPHORUS (P)	0.020	0.050
DISSOLVED ORTHOPHOSPHATE (P)	0.010	0.030
SPECIFIC CONDUCTANCE (MICROMHOS)	63	92
WATER TEMPERATURE (DEG C)	18.0	11.0
COLOR (PLATINUM-COBALT UNITS)	--	--
SECCHI-DISC VISIBILITY (FT)	7	
DISSOLVED OXYGEN	9.7	0.3

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/26/74
TIME	1220
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	1
FECAL COLIFORM, MAXIMUM (COL./100ML)	5
FECAL COLIFORM, MEAN (COL./100ML)	4

REMARKS

THE LAKE IS FED BY THE BENBOW LAKES AND STIDHAM LAKE. THE LAKE IS PART OF A SOUTHWEST-TRENDING KETTLE CHAIN FORMED ALONG PREGLACIAL DRAINAGE LINES. MOST OF THE EMERSED AND SUBMERSED ROOTED AQUATIC PLANTS WERE NEAR THE OUTLET AND INLET. THE NARROW CHANNEL NEAR THE OUTLET WAS CHOKED WITH AQUATIC MACROPHYTES. IN 1971 THE U.S. GEOLOGICAL SURVEY SAMPLED THE LAKE FOUR TIMES. THE PLANT SURVEY WAS MADE ON SEPTEMBER 10, 1971. WATER-LEVEL OBSERVATIONS HAVE BEEN MADE BY THE U.S. GEOLOGICAL SURVEY SINCE 1962.



Tanwax Lake, Pierce County. From Washington Department of Game, June 26, 1952.

Tanwax Lake, Pierce County. July 14, 1971. Approx. scale 1:8100.

TAPPS LAKE PIERCE COUNTY

LATITUDE 47°14'18" LONGITUDE 122°12'11" T20N-R5E-8
PUYALLUP RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	-- SQ MI	RESIDENTIAL DEVELOPMENT	43 %
ALTITUDE	543. FT		
LAKE AREA	2700. ACRES	NUMBER OF NEARSHORE HOMES	535
LAKE VOLUME	67000. ACRE-FT		
MEAN DEPTH	25. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	90. FT		
SHORELINE LENGTH	42. MI	NOT DETERMINED	
SHORELINE CONFIGURATION	5.7		
DEVELOPMENT OF VOLUME	0.28		
BOTTOM SLOPE	0.73 %		
BASIN GEOLOGY	SED./META.		
INFLOW	PERENNIAL		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

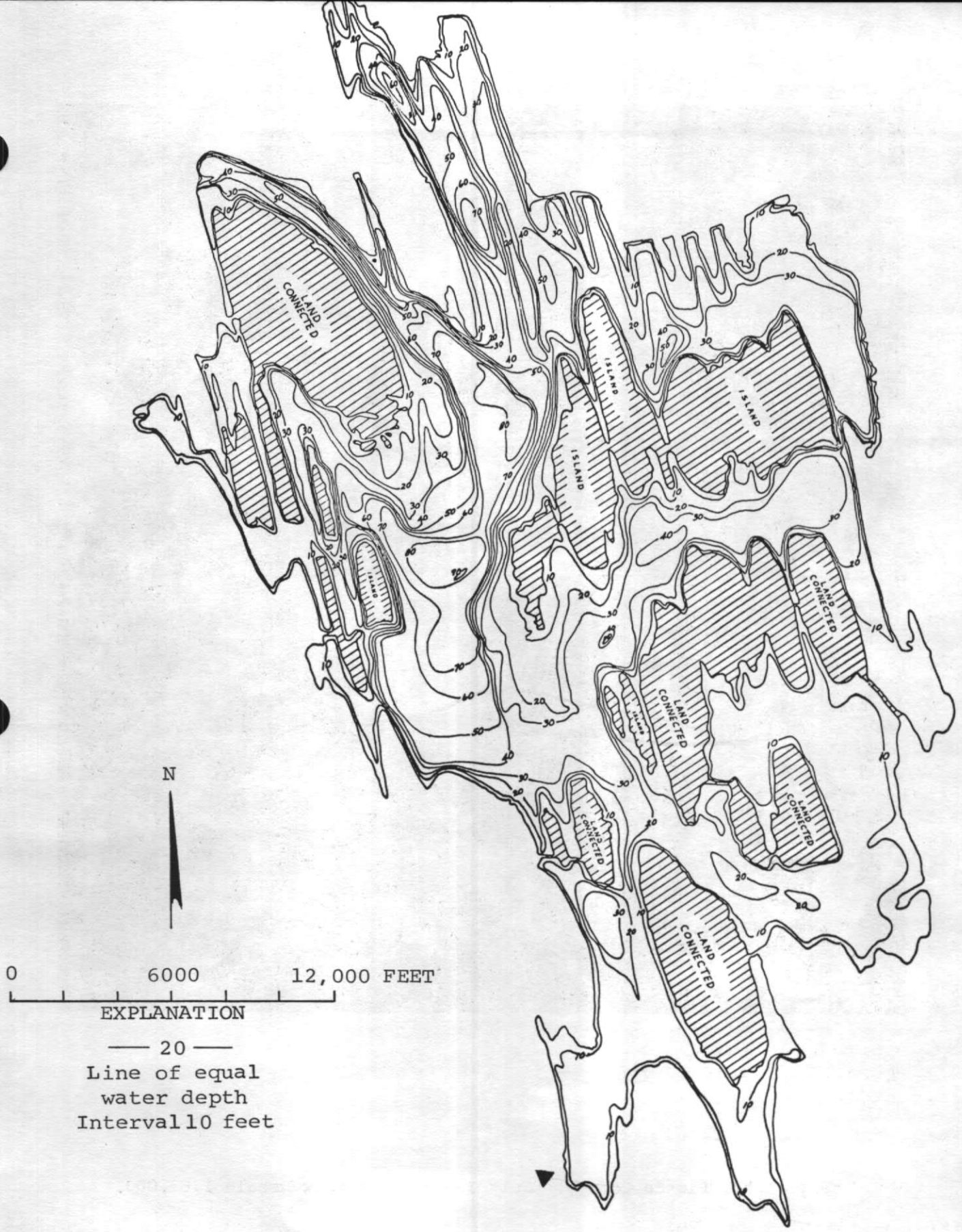
SAMPLE SITE	1		2	
DATE	9/ 4/74		9/ 4/74	
TIME	1245	1250	1345	1350
DEPTH (FT)	3.	46.	3.	16.
TOTAL NITRATE (N)	0.00	0.04	0.01	0.01
TOTAL NITRITE (N)	0.00	0.01	0.01	0.01
TOTAL AMMONIA (N)	0.06	0.12	0.06	0.10
TOTAL ORGANIC NITROGEN (N)	0.10	--	0.09	0.02
TOTAL PHOSPHORUS (P)	0.015	0.033	0.012	0.026
TOTAL ORTHOPHOSPHATE (P)	0.013	0.029	0.010	0.026
SPECIFIC CONDUCTANCE (MICROMHOS)	45	48	45	50
WATER TEMPERATURE (DEG C)	19.3	9.4	19.7	15.2
COLOR (PLATINUM-COBALT UNITS)	10	15	--	--
SECCHI-DISC VISIBILITY (FT)	4		4	
DISSOLVED OXYGEN	9.5	7.9	9.1	9.4

LAKE SHORELINE COVERED BY EMERSED PLANTS LITTLE OR NONE
LAKE SURFACE COVERED BY EMERSED PLANTS NONE OR <1 %

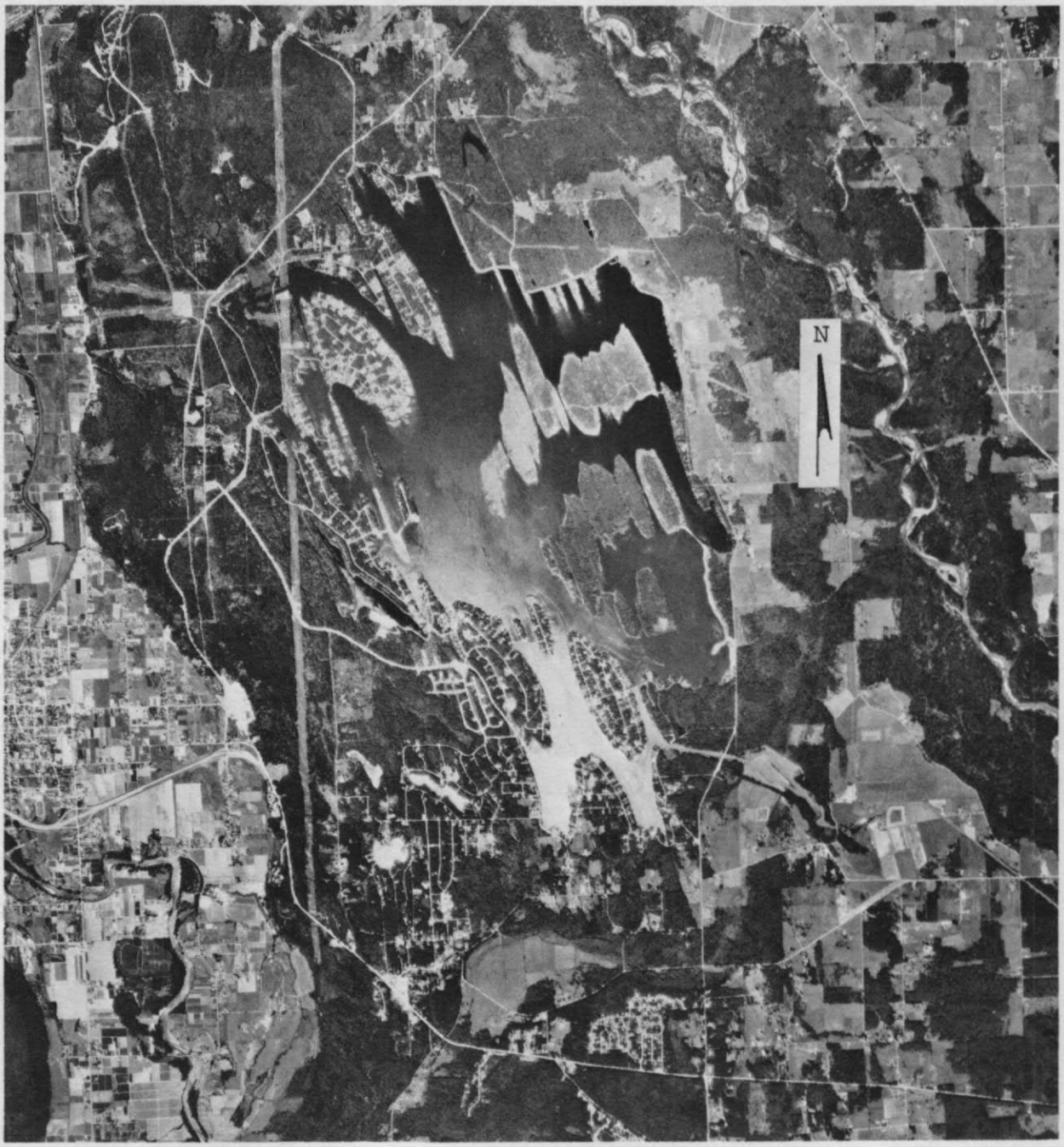
DATE	9/ 4/74
TIME	1515
NUMBER OF FECAL COLIFORM SAMPLES	5
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	14
FECAL COLIFORM, MEAN (COL./100ML)	8

REMARKS

THE LAKE WAS FORMED BY THE DIKING AND INUNDATION OF SEVERAL SMALL LAKES, INTO WHICH PART OF THE FLOW OF THE WHITE RIVER IS DIVERTED. THE LAKE IS USED FOR HYDROPOWER. THE LAKE HAS NUMEROUS ISLANDS AND PENINSULAS. THE WATER WAS TURBID FROM THE GLACIAL SILT OF THE WHITE RIVER INFLOW. THE DO WAS NEAR SATURATION THROUGHOUT THE WATER COLUMN. FLOATING AND SUBMERGED LOGS WERE OBSERVED LOCALLY.



Tapps Lake, Pierce County. From
U.S. Geological Survey, May 31, 1974.



Tapps Lake, Pierce County. July 3, 1972. Approx. scale 1:63,000.

TULE LAKE PIERCE COUNTY

LATITUDE 46*52'48" LONGITUDE 122*26' 0" T16N-R3E-9
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	4.34 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	456. FT		
LAKE AREA	30. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	160. ACRE-FT		
MEAN DEPTH	5. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	10. FT		
SHORELINE LENGTH	1.2 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.6	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.53	AGRICULTURAL	15 %
BOTTOM SLOPE	0.78 %	FOREST OR UNPRODUCTIVE	84 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	1 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

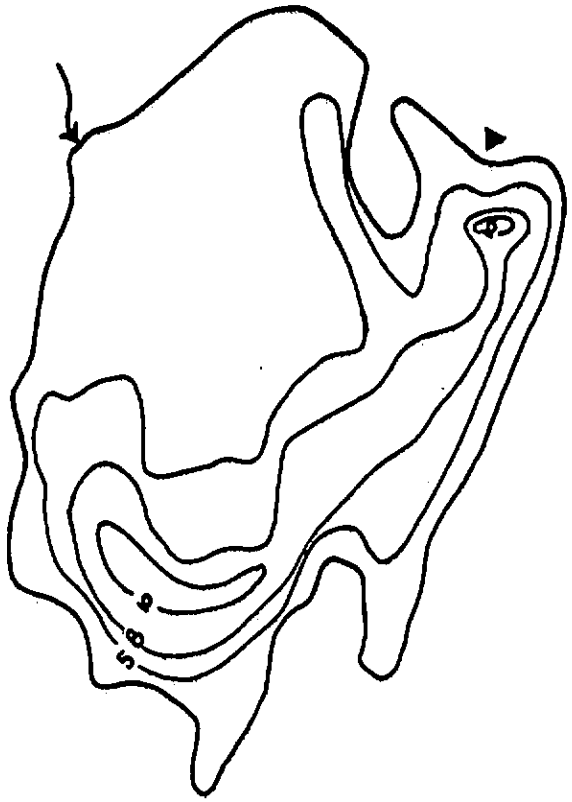
SAMPLE SITE	1	
DATE	8/11/73	
TIME	1515	1520
DEPTH (FT)	3.	6.
TOTAL NITRATE (N)	0.00	--
TOTAL NITRITE (N)	0.01	--
TOTAL AMMONIA (N)	0.16	--
TOTAL ORGANIC NITROGEN (N)	0.53	--
TOTAL PHOSPHORUS (P)	0.057	--
TOTAL ORTHOPHOSPHATE (P)	0.011	--
SPECIFIC CONDUCTANCE (MICROMHOS)	91	--
WATER TEMPERATURE (DEG C)	21.3	19.5
COLOR (PLATINUM-COBALT UNITS)	25	--
SECCHI-DISC VISIBILITY (FT)	3	
DISSOLVED OXYGEN	8.3	7.1

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	76-100 %

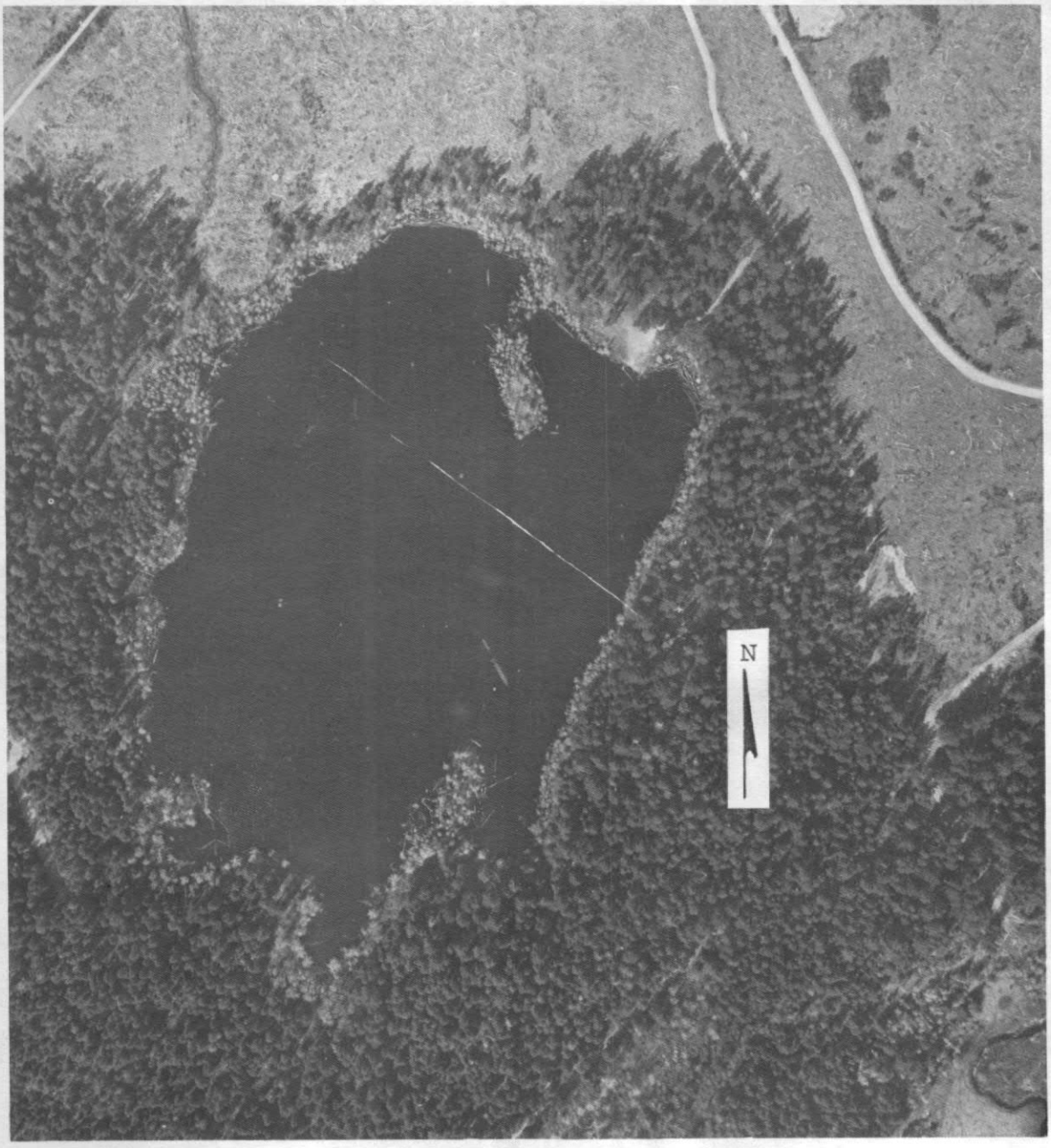
DATE	8/11/73
TIME	1520
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	2
FECAL COLIFORM, MEAN (COL./100ML)	1

REMARKS

A LARGE AREA OF THE LAKE IS LESS THAN 5 FEET DEEP. THE MUCK LITTORAL BOTTOM SUPPORTED A HEAVY COVER OF EMERSED AND SUBMERSED PLANTS. AT ONE TIME THE LAKE WAS REPORTED TO HAVE BEEN USED FOR THE COMMERCIAL PRODUCTION OF MUSKRATS. LOGS LITTERED THE SHORELINE.



Tule Lake, Pierce County. From Washington Department of Game, September 1955.



Tule Lake, Pierce County. April 3, 1973. Approx. scale 1:4800.

TWENTYSEVEN LAKE PIERCE COUNTY

LATITUDE 46°55'29" LONGITUDE 122°17' 0" T17N-R4E-27
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.14 SQ MI	RESIDENTIAL DEVELOPMENT	18 %
ALTITUDE	776. FT		
LAKE AREA	17. ACRES	NUMBER OF NEARSHORE HOMES	5
LAKE VOLUME	180. ACRE-FT		
MEAN DEPTH	10. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	18. FT		
SHORELINE LENGTH	0.62 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.1	RESIDENTIAL SUBURBAN	0 %
DEVELOPMENT OF VOLUME	0.57	AGRICULTURAL	28 %
BOTTOM SLOPE	1.8 %	FOREST OR UNPRODUCTIVE	53 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	19 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

SAMPLE SITE	1	
DATE	8/10/73	
TIME	1625	1630
DEPTH (FT)	3.	11.
TOTAL NITRATE (N)	0.02	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.06	0.09
TOTAL ORGANIC NITROGEN (N)	0.51	0.57
TOTAL PHOSPHORUS (P)	0.021	0.028
TOTAL ORTHOPHOSPHATE (P)	0.016	0.009
SPECIFIC CONDUCTANCE (MICROMHOS)	42	44
WATER TEMPERATURE (DEG C)	22.2	20.0
COLOR (PLATINUM-COBALT UNITS)	20	25
SECCHI-DISC VISIBILITY (FT)	6	
DISSOLVED OXYGEN	8.8	7.7

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

DATE	8/10/73
TIME	1640
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	7
FECAL COLIFORM, MAXIMUM (COL./100ML)	11
FECAL COLIFORM, MEAN (COL./100ML)	9

REMARKS

EMERSED PLANTS COVERED THE MARSHY SHORELINE. THE MUCK LITTORAL BOTTOM SUPPORTED A HEAVY COVER OF SUBMERSED PLANTS (WATER MILFOIL).

EXPLANATION

—10—

Line of equal
water depth
Interval 5 feet

Twentyseven Lake, Pierce County. Bathymetric map from
U.S. Geological Survey, June 13, 1973.
Aerial photo, April 3, 1973.

WAPATO LAKE PIERCE COUNTY

LATITUDE 47°11'34" LONGITUDE 122°27'20" T20N-R3E-29
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	1.98 SQ MI	RESIDENTIAL DEVELOPMENT	23 %
ALTITUDE	314. FT		
LAKE AREA	28. ACRES	NUMBER OF NEARSHORE HOMES	20
LAKE VOLUME	150. ACRE-FT		
MEAN DEPTH	5. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	13. FT		
SHORELINE LENGTH	1.2 MI	RESIDENTIAL URBAN	79 %
SHORELINE CONFIGURATION	1.7	RESIDENTIAL SUBURBAN	2 %
DEVELOPMENT OF VOLUME	0.41	AGRICULTURAL	0 %
BOTTOM SLOPE	1.0 %	FOREST OR UNPRODUCTIVE	17 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	2 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

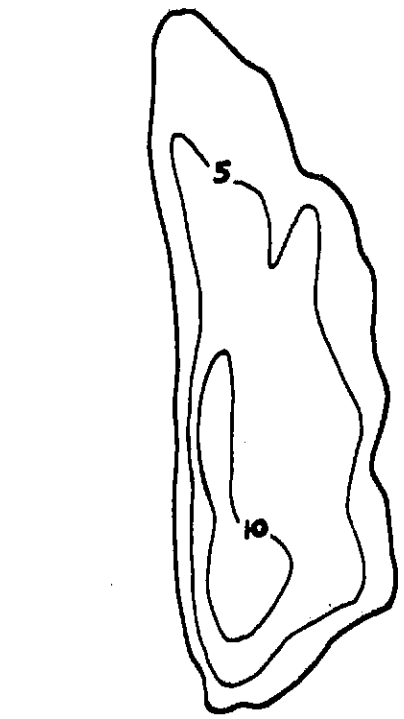
SAMPLE SITE	1	
DATE	8/10/73	
TIME	1220	1225
DEPTH (FT)	3.	7.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.07	0.11
TOTAL ORGANIC NITROGEN (N)	0.31	0.35
TOTAL PHOSPHORUS (P)	0.058	0.10
TOTAL ORTHOPHOSPHATE (P)	0.016	0.029
SPECIFIC CONDUCTANCE (MICROMHOS)	83	85
WATER TEMPERATURE (DEG C)	21.9	19.9
COLOR (PLATINUM-COBALT UNITS)	25	35
SECCHI-DISC VISIBILITY (FT)	6	
DISSOLVED OXYGEN	8.8	4.7

LAKE SHORELINE COVERED BY EMERSED PLANTS	11- 25 %
LAKE SURFACE COVERED BY EMERSED PLANTS	11- 25 %

DATE	8/10/73
TIME	1230
NUMBER OF FECAL COLIFORM SAMPLES	2
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	--
FECAL COLIFORM, MEAN (COL./100ML)	--

REMARKS

AN URBAN LAKE LOCATED IN THE CITY OF TACOMA, A PARK BORDERS THE EAST SHORELINE AND THE LAKE RECEIVES HEAVY RECREATIONAL USE. EMERSED PLANTS WERE MAINLY AT THE NORTH END OF THE LAKE, BUT SUBMERSED PLANTS (WATER MILFOIL) COVERED MUCH OF THE LAKE BOTTOM. IN 1975 THE U.S. GEOLOGICAL SURVEY WILL SAMPLE THE LAKE PERIODICALLY.



N

0 500 1000 FEET

EXPLANATION

—10—

Line of equal
water depth
Interval 5 feet

Wapato Lake, Pierce County. From Washington Department of Game, September 30, 1946.

Wapato Lake, Pierce County. April 3, 1973. Approx. scale 1:4800.

WAUGHOP LAKE PIERCE COUNTY

LATITUDE 47*10' 9" LONGITUDE 122*33'41" T19N-R2E-4
PUGET SOUND BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.34 SQ MI	RESIDENTIAL DEVELOPMENT	0 %
ALTITUDE	230. FT		
LAKE AREA	33. ACRES	NUMBER OF NEARSHORE HOMES	0
LAKE VOLUME	220. ACRE-FT		
MEAN DEPTH	7. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	14. FT		
SHORELINE LENGTH	0.86 MI	RESIDENTIAL URBAN	7 %
SHORELINE CONFIGURATION	1.1	RESIDENTIAL SUBURBAN	11 %
DEVELOPMENT OF VOLUME	0.48	AGRICULTURAL	46 %
BOTTOM SLOPE	1.0 %	FOREST OR UNPRODUCTIVE	21 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	15 %
INFLOW	NONE VISIBLE		
OUTFLOW CHANNEL	ABSENT	PUBLIC BOAT ACCESS TO LAKE	--

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

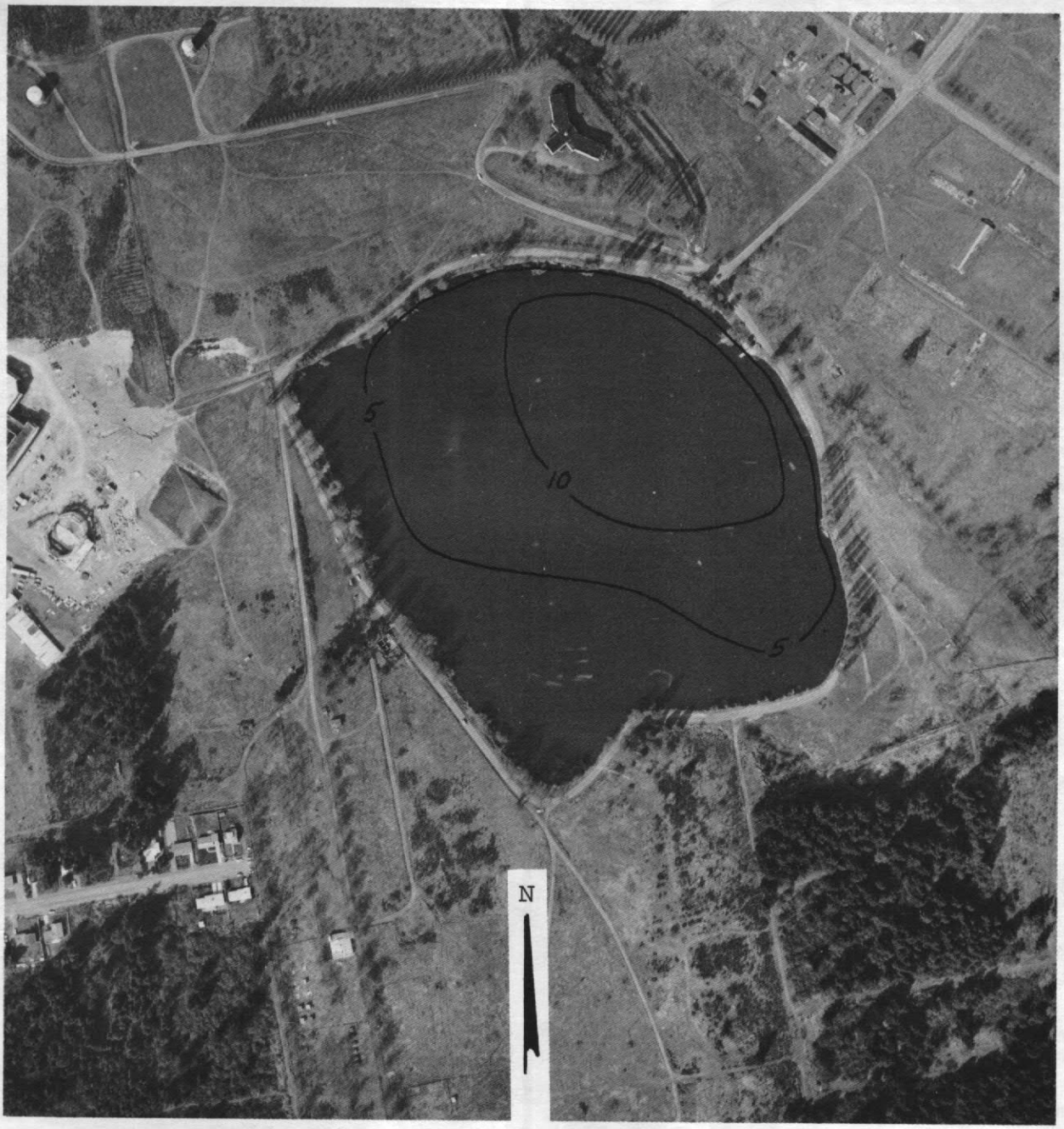
SAMPLE SITE	1	
DATE	8/10/73	
TIME	1330	1335
DEPTH (FT)	3.	7.
TOTAL NITRATE (N)	0.01	0.01
TOTAL NITRITE (N)	0.01	0.00
TOTAL AMMONIA (N)	0.83	1.3
TOTAL ORGANIC NITROGEN (N)	3.5	2.0
TOTAL PHOSPHORUS (P)	0.60	0.55
TOTAL ORTHOPHOSPHATE (P)	0.35	0.44
SPECIFIC CONDUCTANCE (MICROMHOS)	110	117
WATER TEMPERATURE (DEG C)	22.8	20.3
COLOR (PLATINUM-COBALT UNITS)	45	45
SECCHI-DISC VISIBILITY (FT)	3	
DISSOLVED OXYGEN	9.2	0.3

LAKE SHORELINE COVERED BY EMERSED PLANTS	26- 50 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

DATE	8/10/73
TIME	1340
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	8
FECAL COLIFORM, MEAN (COL./100ML)	6

REMARKS

THE LAKE IS LOCATED SOUTHWEST OF TACOMA NEAR FORT STEILACOOM COMMUNITY COLLEGE. AN ALGAL BLOOM WAS OBSERVED.



Waughop Lake, Pierce County. Bathymetric map from U.S. Geological Survey, June 11, 1973. Aerial photo, July 14, 1971.

WHITMAN LAKE PIERCE COUNTY

LATITUDE 46°57'54" LONGITUDE 122°15'18" T17N-R4E-14
NISQUALLY RIVER BASIN

PHYSICAL DATA		CULTURAL DATA	
DRAINAGE AREA	0.97 SQ MI	RESIDENTIAL DEVELOPMENT	85 %
ALTITUDE	601. FT		
LAKE AREA	30. ACRES	NUMBER OF NEARSHORE HOMES	46
LAKE VOLUME	350. ACRE-FT		
MEAN DEPTH	12. FT	LAND USE IN DRAINAGE BASIN	
MAXIMUM DEPTH	20. FT		
SHORELINE LENGTH	0.95 MI	RESIDENTIAL URBAN	0 %
SHORELINE CONFIGURATION	1.2	RESIDENTIAL SUBURBAN	5 %
DEVELOPMENT OF VOLUME	0.58	AGRICULTURAL	27 %
BOTTOM SLOPE	1.5 %	FOREST OR UNPRODUCTIVE	63 %
BASIN GEOLOGY	SED./META.	LAKE SURFACE	5 %
INFLOW	INTERMITTENT		
OUTFLOW CHANNEL	PRESENT	PUBLIC BOAT ACCESS TO LAKE	YES

WATER-QUALITY DATA (IN MG/L UNLESS OTHERWISE INDICATED)

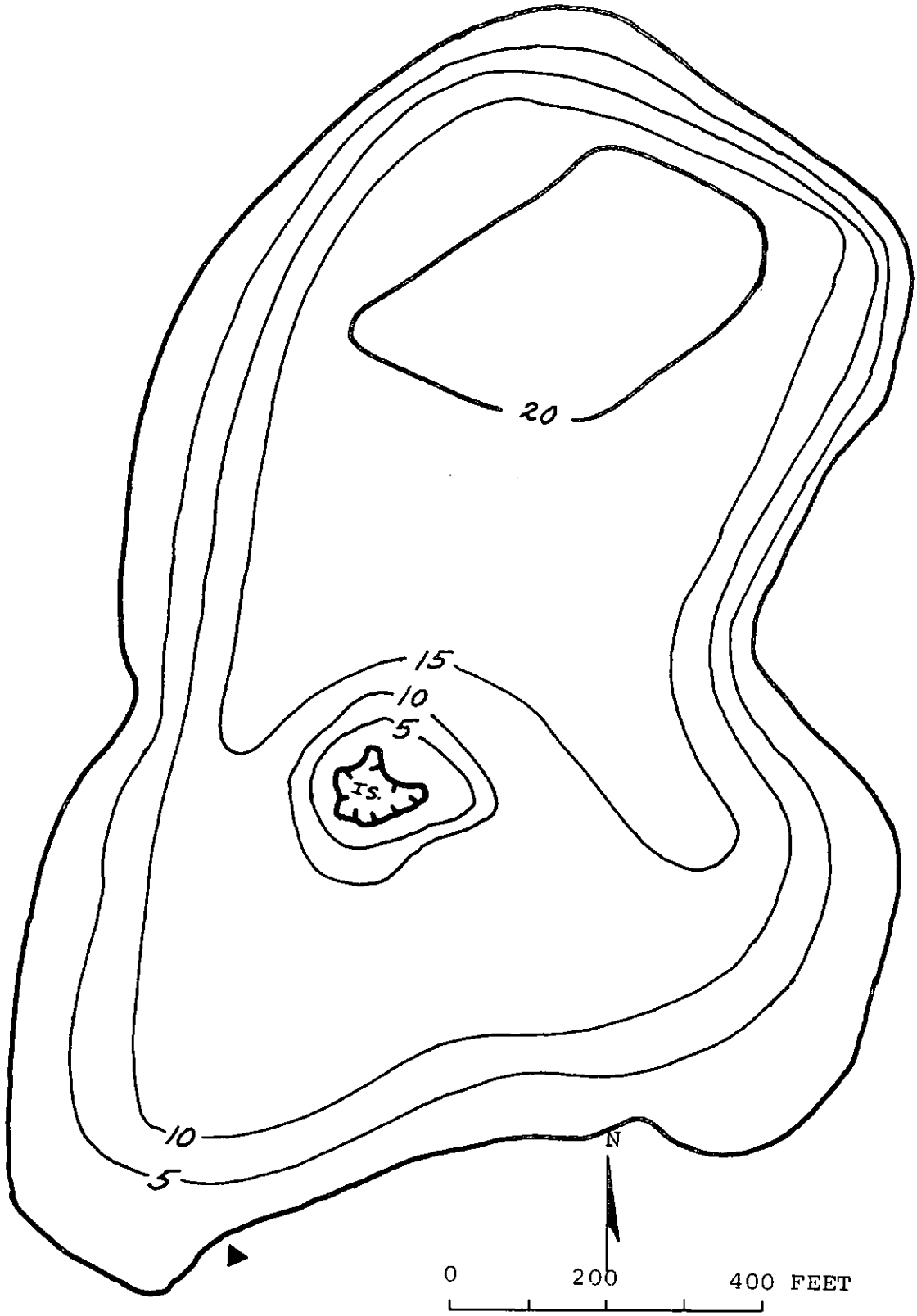
SAMPLE SITE	1	
DATE	8/10/73	
TIME	1445	1450
DEPTH (FT)	3.	14.
TOTAL NITRATE (N)	0.32	0.36
TOTAL NITRITE (N)	0.00	0.00
TOTAL AMMONIA (N)	0.09	0.16
TOTAL ORGANIC NITROGEN (N)	0.21	0.14
TOTAL PHOSPHORUS (P)	0.013	0.054
TOTAL ORTHOPHOSPHATE (P)	0.005	0.031
SPECIFIC CONDUCTANCE (MICROMHOS)	81	104
WATER TEMPERATURE (DEG C)	22.0	16.7
COLOR (PLATINUM-COBALT UNITS)	15	30
SECCHI-DISC VISIBILITY (FT)	13	
DISSOLVED OXYGEN	9.0	0.4

LAKE SHORELINE COVERED BY EMERSED PLANTS	76-100 %
LAKE SURFACE COVERED BY EMERSED PLANTS	1- 10 %

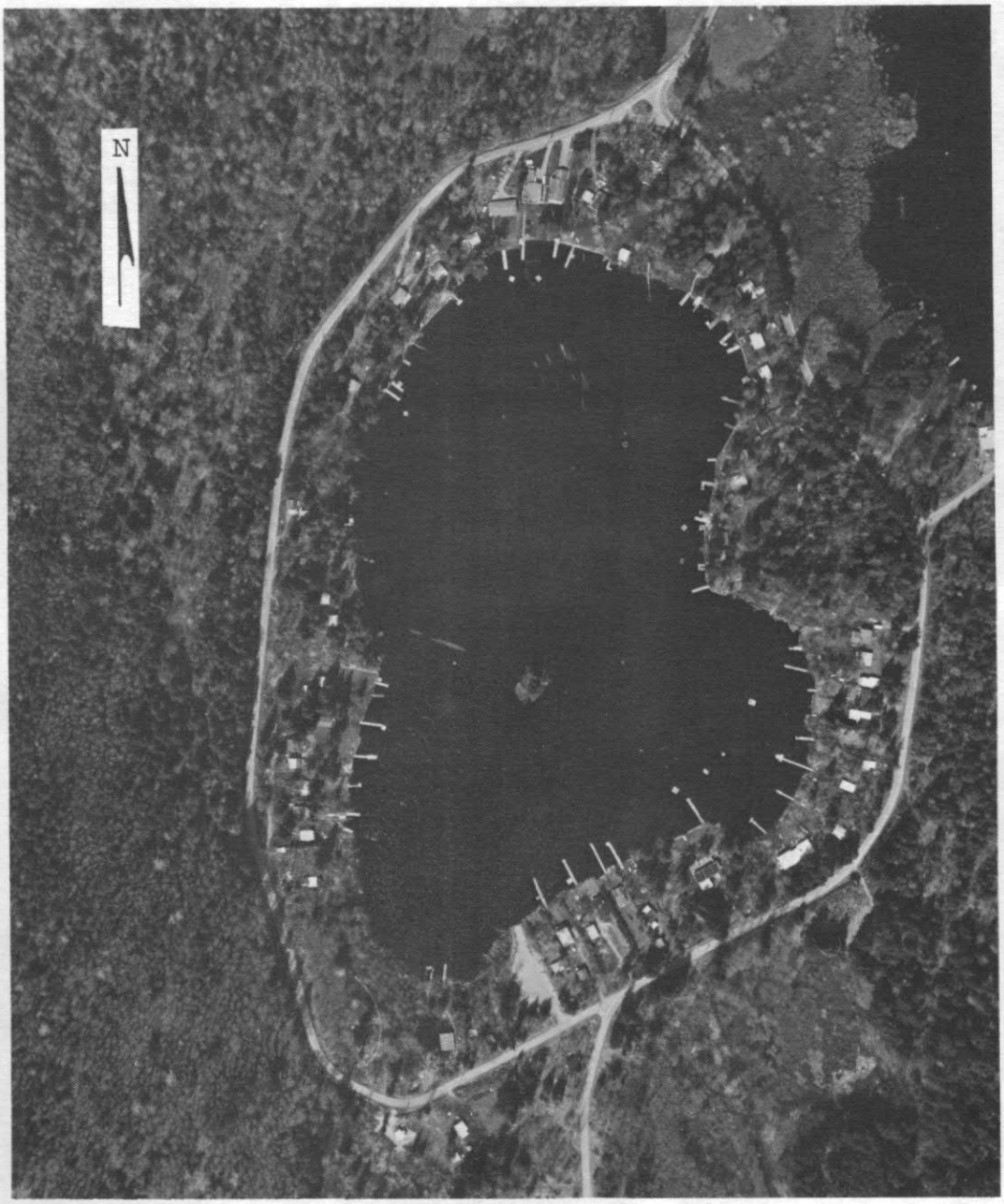
DATE	8/10/73
TIME	1500
NUMBER OF FECAL COLIFORM SAMPLES	3
FECAL COLIFORM, MINIMUM (COL./100ML)	<1
FECAL COLIFORM, MAXIMUM (COL./100ML)	<1
FECAL COLIFORM, MEAN (COL./100ML)	<1

REMARKS

LARGEST OF THE BENBOW GROUP OF LAKES. THE LAKE IS FED BY THE TWIN LAKES. EMERSED PLANTS COVERED APPROXIMATELY 80 PERCENT OF THE SHORELINE WITH SOME LARGE PATCHES OF PLANTS AT THE SOUTH END OF THE LAKE. THE MUCK LITTORAL BOTTOM SUPPORTED A HEAVY COVER OF SUBMERSED PLANTS (ELODEA AND PONDWEED).



Whitman Lake, Pierce County. From
U.S. Geological Survey, May 2, 1973.



Whitman Lake, Pierce County. April 3, 1973. Approx. scale 1:4800.

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