

Project No. 1268 PH 2

January 28, 1971

To: Water Investigations Branch
Water Resources Service
Department of Lands Forests and Water Resources
Parliament Buildings
Victoria, B. C.

Subject: SAMPLING OF OKANAGAN LAKES--SPRING, 1970

A. OBJECT

To sample the various lakes in the Okanagan system during the overturn period in the spring of 1970 and to determine the nutrient loading of nitrogen and phosphorus.

B. BACKGROUND

The nutrient loading of a lake is determined most accurately when thermal mixing is at its greatest and when phytoplankton activity is least (Sawyer, 1952). At most North American locations, this occurs during the spring of the year, at that time when air temperatures fluctuate above and below the temperature corresponding to the maximum density of the water, i.e., 4 C.

B. C. Research was commissioned by the B. C. Water Investigations Branch to undertake a spring sampling of the lakes in the Okanagan system, during the period of thermal mixing in the spring of 1970. Detailed instructions were elaborated in a meeting on February 27, which was attended by Drs. T.G. Northcote and R. J. Buchanan, representing the Provincial Government, and Drs. C. C. Walden and W. N. English and Mr. T. E. Howard, representing B. C. Research. Requirements for the spring sampling were delineated in Dr. Buchanan's letter of March 5, summarizing the program agreed to at the meeting of February 27.

Subsequently, after a meeting of the Limnology Task Force for the Okanagan study, Dr. Buchanan, in his letter of March 19, instructed that the sampling of the five lakes should be carried through one cycle only.

C. SUMMARY

1. A survey of Lake Okanagan, Kalamalka Lake, Woods Lake, Skaha Lake and Lake Osoyoos was undertaken over the period March 10 to 25, 1970.
2. Dissolved oxygens and water temperatures were highly uniform with depth at all sampling locations. Dissolved oxygen values approached saturation; whereas water temperatures approximated 4 C.
3. Water clarity was relatively high in Lake Okanagan and in Kalamalka Lake; relatively low in Woods Lake, Skaha Lake and Lake Osoyoos.
4. Nutrient loadings of nitrate nitrogen, total Kjeldahl nitrogen, orthophosphate and total phosphate were relatively low in Kalamalka Lake and Lake Okanagan. Nutrient loadings were marginally higher in the northern end of Lake Okanagan than in the main body of the lake.
5. Nutrient loadings were appreciably higher in Woods Lake, Skaha Lake and Lake Osoyoos. Loadings were highest in Woods Lake.
6. Nutrient loadings were reasonably uniform with depth at all sampling locations, although more variation occurred in the nitrogen values. This variability exhibited no consistent pattern.
7. A limited number of conductivity analyses showed a minimum of variation.
8. The data obtained in this survey, must be interpreted in conjunction with other data being collected, before any definitive assessment of the trophic state of the lakes can be made.

D. METHODS

1. Sampling

Sampling was undertaken by a three-man crew, utilizing a truck and boat-trailer combination. The boat was a 19-foot Starcraft with a deep V hull and a walk through windshield. Sampling locations were located by sextant and water samples were taken with reversing water bottles, using a hydrographic winch.

Samples were collected in two-liter polyethylene bottles, which after cleaning had received acid and distilled water rinses. Samples were shipped the evening of the day of collection, either to the Water Quality Laboratory of the Department of Energy, Mines and Resources in Calgary, or to B. C. Research laboratories in Vancouver.

2. Dissolved Oxygen--Temperature

Dissolved oxygen and temperatures to depths of 150 feet were determined using a Yellow Springs Instrument 54 Oxygen Meter with a 150-foot probe. At depths below 150 feet, water samples were collected using the hydrographic winch and the reversing water bottles. Dissolved oxygens and temperature were then measured on these samples. The dissolved oxygen meter was calibrated periodically according to the solubility of oxygen at the existing barometric pressure, as listed in Table 1. Two dissolved oxygen meters were kept in the field continuously and cross checked against each other.

3. Turbidity

Turbidities were determined according to the Secchi disc technique. The disc was lowered into the water until it was no longer visible and then was raised until just visible. Recorded depths were the average of these two readings.

4. Conductance

Conductance was determined in B. C. Research laboratories, using an Industrial Instruments Inc. Model No. RC16B2 Conductivity Meter.

5. Phosphorus

a. Orthophosphate

i Calgary

As desirable, samples were filtered through a Millipore HA 0.45 μ filter. Orthophosphate was determined on the filtrate as per the stannousfluoride method described in Standard Methods for the Examination of Water and Waste Water, pages 234 to 236, as adapted for automation on the Technicon Autoanalyzer.

ii B. C. Research

As required, samples were filtered and orthophosphate was determined by the variation of the polyblue technique described by Harwood, van Steenderen and Kühn (1969).

b. Total Phosphate

Prior to determination of orthophosphate, individual 100-ml aliquots were placed in 150-ml beakers to which was added 1 ml of a strong acid solution (300 ml of concentrated sulfuric acid and 4 ml of concentrated nitric acid in 1 liter) and 0.4 g of potassium persulfate. Samples were then digested

in a standard autoclave for 30 min, after pressure had reached 15 psig. After removal from the autoclave samples were filtered, as desirable, and total phosphates determined as per the procedures for orthophosphate.

6. Nitrogen

a. Nitrate

i Calgary

As desirable, samples were filtered through a Millipore HA 0.45 μ filter, nitrate was determined as per the phenoldisulfonic acid method described on pages 195 to 198 of Standard Methods for the Examination of Water and Waste Water (1965).

b. Total Nitrogen (Kjeldahl)

i Calgary

Nitrogen was determined as per the organic nitrogen method on pages 208 to 211 in Standard Methods for the Examination of Water and Waste Water, (1965) as adapted for the Technicon Autoanalyzer.

ii B. C. Research

Total nitrogen, following Kjeldahl digestion, was determined as per the procedure described in A Practical Handbook of Seawater Analysis, by Stickland and Parsons (1968).

E. RESULTS

1. Sample Locations

Eight transections were selected on Lake Okanagan, six in the main body of the lake and one each on each of the two northern arms. Depth profiles at each of these eight transections are represented graphically in Figures 1 to 4, inclusive. The location of the eight transects are shown in Figure 8. On each transection, five individual sampling locations were established. Dissolved oxygen, temperature and Secchi disc measurements were made at each sampling location, whereas samples were taken at the middle station on each transection, for subsequent chemical analysis.

Two transections were established on Kalamalka Lake. Their location is shown in Figure 8 and in Figure 5. Five sampling stations were established on each transection. Dissolved oxygen, temperature and Secchi disc measurements were made at each sampling

station. Water samples were collected from one station on each transection and from a single station C in the north arm of the lake (Figure 8), for subsequent chemical analysis.

A single north-south transection was established on Woods Lake and the depth profile and the geographic location are shown in Figures 7 and 8 respectively. Dissolved oxygen, temperature and Secchi disc measurements were made at all five stations and water samples were collected for subsequent analysis at the center, the northernmost and southernmost stations.

Three transections were established on Skaha Lake, the depth profiles and geographic locations being shown in Figure 6 and 9, respectively. Temperature and dissolved oxygen readings at the various depths were made at each sampling station. Secchi disc measurements also were made. For transections A and B, water samples were collected from the second most westerly station, for subsequent chemical analysis. For transection C, collection was from the center station.

One transection was established on Osoyoos Lake. The depth profile and the geographic location of this transection are shown in Figures 7 and 9, respectively. Dissolved oxygen and temperature measurements were made at various depths at each sampling station and samples for subsequent chemical analysis were taken at the second most western sampling station. Secchi disc measurements also were made at each sampling station.

2. Dissolved Oxygen and Temperature Measurements

Dissolved oxygen and temperature values for the individual five sampling stations on each of the eight transections for Okanagan Lake are given in Tables 2 through 9, inclusive. Some additional values for sampling station no. 3 on transections A, B and C are given in Tables 18 through 20 inclusive.

All dissolved oxygen levels at all depths approached saturation. Temperatures also were extremely uniform ranging from 3.3 to 4.0 C, although the range was not this wide at any individual sampling station. For the most part, both dissolved oxygen values and temperatures were absolutely uniform at all depths at each sampling location.

Dissolved oxygen and temperature values obtained on Kalamalka Lake were extremely similar to those obtained for Lake Okanagan. All dissolved oxygen values approached saturation and were extremely uniform with depth. Temperature values were encompassed within the narrow range of 3.6 to 4.0 C. In most instances, temperatures were absolutely uniform at all depths.

Dissolved oxygen and temperature values obtained on the north-south longitudinal transection on Woods Lake are given in Table 13. Dissolved oxygen values approached saturation at all depths and temperature values were absolutely uniform with depth and encompassed within the range of 3.5 to 3.8 C.

Dissolved oxygen and temperature values obtained at the five sampling stations on each of the three transections for Lake Skaha, are given in Tables 14 - 16, inclusive. In all instances, dissolved oxygens and temperature values were uniform with depth. Dissolved oxygen values approached saturation; whereas temperature values were all 3.7 C.

Similar dissolved oxygen and temperature values for the single transection on Osoyoos Lake are given in Table 17. All dissolved oxygen values again approached saturation; whereas temperature values were uniform, only a single reading of 4.5 C being observed. All other temperature readings were 4.0 C.

3. Secchi Disc Turbidities

Secchi disc turbidities obtained for Lake Okanagan in Tables 2 to 9 inclusive, range from 5.0 to 15.0 ft. Turbidities were greater, i.e., Secchi disc values were less for transections A, G and H, which represent the most southern and northern transections on the lake. In the main body of the lake, Secchi disc values ranged from 10.5 to 15.0 ft.

Secchi disc readings at the individual stations on the two transections of Kalamalka Lake ranged from 10.0 to 16.0 ft. These relatively high values, indicating higher water clarity, correspond reasonably closely to values obtained for Lake Okanagan.

In contrast to Lake Okanagan and to Kalamalka Lake, the Secchi disc readings obtained on Woods Lake were relatively low, between 2.5 and 3.0 ft.

Similarly, Secchi disc readings for Skaha Lake were also low, ranging from 3.5 to 5.0 ft. Low readings were obtained also at the sampling stations on the single transection on Lake Osoyoos, with values of 3.0 to 3.5 ft.

4. Phosphorus and Nitrogen

During the survey, attempts were made to send a maximum of samples to the Calgary Water Quality Laboratory of the Department of Energy, Mines and Resources. This allocation of samples was expected to utilize Autoanalyzers in the Calgary laboratory, thus minimizing analytical costs. Inasmuch as the sampling survey proceeded on a seven-day-per-week basis and the Calgary laboratory operated only five days per week, some samples were analyzed at

B. C. Research. This was necessary because phosphorus analyses must be initiated within 24 hr of sample collection.

Analytical values for nitrate, total Kjeldahl nitrogen, orthophosphate and total phosphate, corresponding to various transection locations and depths from Lake Okanagan, are reported in Table 22. Individual samples are identified by transection number, sampling station number and by depth in meters. Although values are low, nitrate nitrogen and Kjeldahl nitrogen values are variable, showing no consistent pattern. Phosphate values are all low, with most of the orthophosphate values lying below the limit of detection of the analytical method. A break in the continuity of sampling occurred between samples originating from transection C, station 3 and transection D, station 3. An apparent break in total phosphate values is evident between these two samplings, with later samples showing higher total phosphate contents. Although the difference may be an artifact of analytical technique to some degree, the high values obtained on transections F, G and H, undoubtedly do represent higher phosphate contents in the northern half of the lake.

Similar nitrate, Kjeldahl nitrogen, orthophosphate and total phosphate values for samples collected at various depths, from individual sampling stations and the two transections on Kalamalka Lake are reported in Table 23. All values are consistently low, although some variability is evident in total nitrogen values.

Analysis of samples collected at three sampling stations on the single transection of Woods Lake, are given in Table 24. Although nitrate values are low, Kjeldahl values are appreciably higher, approximately double those found in Lake Okanagan and Kalamalka Lake. In particular, phosphate values are an order of magnitude higher than those found in Lake Okanagan and Kalamalka Lake, with orthophosphate values averaging 0.125 mg/l and total phosphate 0.213 mg/l.

Corresponding analytical results for samples collected at the center station of the three transections on Skaha Lake are reported in Table 25. Nitrate and total nitrogen values are higher than obtained for other lakes. Orthophosphate values are appreciably higher than those found in Kalamalka Lake and Lake Okanagan. Moreover, total phosphate values are substantially above those found in these other two lakes.

Analytical values for the limited number of samples collected from Lake Osoyoos are given in Table 26. Results are similar to those obtained for Skaha Lake. The significant feature of the results in Table 26 are the relatively high total phosphate values, averaging 0.091 mg/l.

A limited number of samples collected from Lake Okanagan were exchanged between the Calgary Water Quality Laboratory of the Department of Energy, Mines and Resources and B. C. Research. Comparative results are listed in Table 27. Nitrate values for individual samples agreed reasonably closely between the two laboratories. The major difference was represented by a single sample, giving a value of 0.87 mg nitrate/l, as analyzed by the Calgary laboratory. Otherwise, Calgary results were marginally higher than those obtained at B. C. Research. For the total Kjeldahl nitrogen values, DEMR values averaged higher than those obtained at B. C. Research, although the occasional reversal did occur for individual samples. Phosphate analyses on samples exchanged between the two laboratories were minimal. Comparison of interlaboratory results is of limited validity, inasmuch as the orthophosphate and total phosphate content of the samples approach the limit of sensitivity of the analytical procedures.

5. Conductance

Conductance of samples collected at transections A, B, C, D and E on Lake Okanagan and from Woods Lake are presented in Table 28. Conductance of the Lake Okanagan samples varied marginally, all values being encompassed in the range of 192 to 253 micromhos/cm. Slightly higher values were obtained for samples collected at transection E, sampling station 3.

Values obtained on samples taken from Woods Lake also were similar, although two samples yielded anomalously low values of 119 and 109 micromhos/cm.

F. DISCUSSION

Only limited significance can be attached to the results presented in this report, inasmuch as numerous other factors must be considered in assessing the trophic state of the individual lakes and the rates at which changes are occurring. These other data are being collected during the Okanagan study.

The low nitrogen and phosphorus values obtained for Kalamalka Lake and for Lake Okanagan would suggest that the nutrient loading of these lakes is low and that the probability of algal blooms is slight. The validity of these observations is limited by the sensitivity of the procedures employed for the analysis of phosphorus. The analytical data for the northern shallower end of Lake Okanagan suggests that this area may be more subject to excessive plant growth. Values obtained for Skaha, and Woods Lake and for Lake Osoyoos are in the range where it is known that excessive plant growth and algal blooms can occur.

G. REFERENCES

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CCW:c

Table 1

BAROMETRIC PRESSURE (mm of Hg) AT KELOWNA AIRPORT

FOR THE PERIOD MARCH 1 - 31, 1970

Date	0700 hrs	1300 hrs	1900 hrs	2400 hrs
March 1	756.2	753.7	760.9	758.7
2	755.2	757.1	752.4	--
3	764.5	763.3	759.8	762.2
4	763.1	760.7	763.1	763.6
5	765.1	--	761.2	763.4
6	763.0	762.8	763.9	763.1
7	757.7	760.5	758.9	756.1
8	764.7	763.3	762.3	763.1
9	765.6	763.2	--	764.0
10	763.0	759.7	762.4	762.7
11	758.1	757.7	758.4	759.9
12	764.1	763.0	759.5	762.6
13	768.3	767.5	763.0	765.3
14	763.6	763.0	767.2	765.7
15	768.4	766.0	764.5	766.3
16	761.8	760.3	764.7	760.5
17	770.2	--	762.4	766.6
18	777.4	775.0	772.4	775.0
19	773.7	770.2	773.5	772.9
20	--	760.9	767.1	765.5
21	767.5	766.5	763.3	765.2
22	768.7	765.4	768.0	769.3
23	761.8	758.6	765.7	764.2
24	--	771.6	--	763.4
25	771.2	775.3	772.4	773.5
26	771.4	771.4	--	767.9
27	767.7	771.3	770.7	769.3
28	767.0	767.5	763.7	764.3
29	760.6	760.9	763.9	761.2
30	768.8	767.0	762.4	765.5
31	766.8	772.4	766.4	766.7

Table 2

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN A

March 10, 1970

Sample Depth (m)	STATION NUMBER (WEST TO EAST)									
	1		2		3*		4		5	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
3	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
6	"	"	"	"	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	"	"	"	"
18	"	"	"	"	"	"	"	"	"	"
21	"	"	"	"	"	"	"	"	"	"
24	"	"	"	"	"	"	"	"	"	"
27	"	"	"	"	"	"	"	"	"	"
30	"	"	"	"	"	"	"	"	"	"
35	"	"	"	"	"	"	"	"	"	"
40	"	"	"	"	"	"	"	"	"	"
45	"	"	"	"	"	"	"	"	"	"
50	"	"	"	"	"	"	"	"	"	"
60	"	"	"	"	"	"	"	"	"	"
65	"	"	"	"	"	"	"	"	"	"
80	"	"	"	"	"	"	"	"	"	"
97	"	"	"	"	"	"	"	"	"	"
Secchi Disc (m)	9.0	10.0	9.0	9.0	9.5	9.0	9.5	9.0	9.0	9.0

* Water samples taken

Table 3

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN B

March 11, 1970

Sample Depth (m)	STATION NUMBER (WEST TO EAST)										5	
	1		2		3*		4		5			
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	13.4	3.0	13.3	3.5	13.4	3.3	13.3	3.5	13.3	3.5	13.3	3.5
3	"	"	"	"	13.3	"	"	"	"	"	"	"
6	"	3.5	"	"	"	3.5	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	"	"	"	"	"	"
18	13.3	"	"	"	"	"	"	"	"	"	"	"
21	"	"	"	"	"	"	"	"	"	"	"	"
24	"	"	"	"	"	"	"	"	"	"	"	"
27	"	"	"	"	"	"	"	"	"	"	"	"
30	13.5	"	"	"	"	"	"	"	"	"	"	"
35	13.6	"	"	"	"	"	"	"	"	"	"	"
40	"	"	"	"	"	"	"	"	"	"	"	"
45	"	"	"	"	"	"	"	"	"	"	"	"
50	"	"	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	"	"
70	"	"	"	"	"	"	"	"	"	"	"	"
80	"	"	"	"	"	"	"	"	"	"	"	"
90	"	"	"	"	"	"	"	"	"	"	"	"
105	"	"	"	"	"	"	"	"	"	"	"	"
110	"	"	"	"	"	"	"	"	"	"	"	"
130	"	"	"	"	"	"	"	"	"	"	"	"
Secchi Disc (m)	13.0		13.0		14.0		13.0		13.0		13.0	

* Water samples taken

Table 4

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN C

March 11, 1970

Sample Depth (m)	STATION NUMBER (WEST TO EAST)							
	1		2		3*		4	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
3	"	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	"	"
18	"	"	"	"	"	"	"	"
21	"	"	"	"	"	"	"	"
24	"	"	"	"	"	"	"	"
27	"	"	"	"	"	"	"	"
30	"	"	"	"	"	"	"	"
40	"	"	"	"	"	"	"	"
50	"	"	"	"	"	"	"	"
60	"	"	"	"	"	"	"	"
70	"	"	"	"	"	"	"	"
80	"	"	"	"	"	"	"	"
85	"	3.9	"	"	"	"	"	"
90			"	"	"	"	"	"
100			"	"	"	"	"	"
110			"	"	"	"	"	"
120			"	"	"	"	"	"
130			13.2	4.0	"	"	"	4.0
140					"	"		
Secchi Disc (m)								

* Water samples taken

Table 4

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN C

March 11, 1970

Sample Depth (m)	STATION NUMBER (WEST TO EAST)									
	1		2		3*		4		5	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
150					13.3	3.5				
160					"	"				
170					"	"				
Secchi Disc (m)	10.0		13.0		12.0		10.5		10.5	

* Water samples taken

Table 5

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN D

March 12, 1970

Sample Depth (m)	S T A T I O N N U M B E R (W E S T T O E A S T)										5	
	1		2		3*		4		5			
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
3	"	"	"	"	"	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	"	"	"	"	"	"
18	"	"	"	"	"	"	"	"	"	"	"	"
21	"	"	"	"	"	"	"	"	"	"	"	"
24	"	"	"	"	"	"	"	"	"	"	"	"
27	"	"	"	"	"	"	"	"	"	"	"	"
30	"	"	"	"	"	"	"	"	"	"	"	"
40	"	"	"	"	"	"	"	"	"	"	"	"
50	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
60	"	"	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
70	"	"	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
90	"	"	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
100	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
110	"	"	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
120	"	"	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
130	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
140	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
Secchi Disc (m)												

* Water samples taken

Table 5

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN D

March 12, 1970

Sample Depth (m)	S T A T I O N N U M B E R (W E S T T O E A S T)									
	1		2		3*		4		5	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
150			13.3	3.5	13.3	3.5	13.3	3.5		
160			13.3	3.5						
170			13.3	3.5						
180										
190			13.3	3.5	13.3	3.5				
200										
Secchi Disc (m)	13.0		14.0		13.0		14.0		13.0	

* Water samples taken

Table 6

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN E

March 13, 1970

Sample Depth (m)	STATION NUMBER (WEST TO EAST)										5
	1		2		3*		4		5		
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	
0	13.1	3.8	13.1	3.8	13.1	3.8	13.1	3.8	13.1	3.8	
3	"	"	"	"	"	"	"	"	"	"	
6	"	"	"	"	"	"	"	"	"	"	
9	"	"	"	"	"	"	"	"	"	"	
12	"	"	"	"	"	"	"	"	"	"	
15	"	"	"	"	"	"	"	"	"	"	
18	"	"	"	"	"	"	"	"	"	"	
21	"	"	"	"	"	"	"	"	"	"	
24	"	"	"	"	"	"	"	"	"	"	
27	"	"	"	"	"	"	"	"	"	"	
30	"	"	"	"	"	"	"	"	"	"	
40	"	"	"	"	"	"	"	"	"	"	
50	"	"	"	"	"	"	"	"	"	"	
60	"	"	"	"	"	"	"	"	"	"	
70	"	"	"	"	"	"	"	"	"	"	
80	"	"	"	"	"	"	"	"	"	"	
90	"	"	"	"	"	"	"	"	"	"	
120											
150											
170											
180											
200											
225											
Secchi Disc (m)	14.0		14.0		13.0		13.0		13.0	15.0	

* Water samples taken

Table 7

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN F

March 15, 1970
and March 16, 1970

Sample Depth (m)	STATION NUMBER (WEST TO EAST)										5
	1	2	3*	4	5	6	7	8	9	10	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	
0	13.3	3.5	13.1	3.8	13.2	4.0	13.1	3.8	13.1	3.8	
3	"	"	"	"	13.1	3.8	"	"	"	"	
6	"	"	"	"	"	"	"	"	"	"	
9	"	"	"	"	"	"	"	"	"	"	
12	"	"	"	"	"	"	"	"	"	"	
15	"	"	"	"	"	"	"	"	"	"	
18	"	"	"	"	"	"	"	"	"	"	
21	"	"	"	"	"	"	"	"	"	"	
24	"	"	"	"	"	"	"	"	"	"	
27	"	"	"	"	"	"	"	"	"	"	
30	"	"	"	"	"	"	"	"	"	"	
45	"	"	"	"	"	"	"	"	"	"	
70	"	"	"	"	"	"	"	"	"	"	
80	"	"	"	"	"	"	"	"	"	"	
95	"	"	"	"	"	"	"	"	"	"	
120	"	"	"	"	"	"	"	"	"	"	
135	"	"	"	"	"	"	"	"	"	"	
Secchi Disc (m)	13.0	13.0	13.0	15.5	12.0	13.0					

* Water samples taken

Table 8

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN G

March 16, 1970

Sample Depth (m)	STATION NUMBER (WEST TO EAST)									
	1	2	3*	4	5					
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	13.5	4.0	13.5	3.8	13.8	3.4	13.3	3.5	13.4	3.8
3	"	3.5	"	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	"	"	"	"
18	"	"	"	"	"	"	"	"	"	"
21	"	"	"	"	"	"	"	"	"	"
24	"	"	13.6	3.8	"	"	"	"	"	"
27										
Secchi Disc (m)	5.0		5.5		5.5		5.5		5.5	

* Water samples taken

Table 9

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN H

March 17, 1970

Sample Depth (m)	STATION NUMBER (WEST TO EAST)									
	1		2		3*		4		5	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	13.3	3.5L	13.3	3.5	13.3	3.5	13.3	3.5	13.3	3.5
3	"	"	"	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	"	"	"	"
18	"	"	"	"	"	"	"	"	"	"
21	"	"	"	"	"	"	"	"	"	"
24	"	"	"	"	"	"	"	"	"	"
27	"	"	"	"	"	"	"	"	"	"
30	"	"	"	"	"	"	"	"	"	"
40	"	"	"	"	"	"	"	"	"	"
50	"	"	"	"	"	"	"	"	"	"
60	"	"	"	"	"	"	"	"	"	"
70	"	"	"	"	"	"	"	"	"	"
80	"	"	"	"	"	"	"	"	"	"
85	"	"	"	"	"	"	"	"	"	"
Secchi Disc (m)	6.5		7.0		7.0		7.0		7.0	

* Water samples taken

Table 10

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

KALAMALKA A

March 18, 1970

Sample Depth (m)	STATION NUMBER (WEST TO EAST)										5	
	1		2		3		4 *		5			
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	12.3	3.8	12.3	3.8	12.3	3.9	12.2	3.8	12.3	4.0		
3	"	"	"	"	"	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	"	"	"	"	"	"
18	"	"	"	"	"	"	"	"	"	"	"	"
21	"	"	"	"	"	"	"	"	"	"	"	"
24			"	"	"	"	"	"	"	"	"	"
27			"	"	"	"	"	"	"	"	"	"
30			"	"	"	"	"	"	"	"	"	"
40			"	"	"	"	"	"	"	"	"	"
50			"	"	"	"	"	"	"	"	"	"
60			"	"	"	"	"	"	"	"	"	"
70			"	"	"	"	"	"	"	"	"	"
80			"	"	"	"	"	"	"	"	"	"
90									"	"	"	"
100									"	"	"	"
110									"	"	"	"
115									"	"	"	"
120									"	"	"	"
Secchi Disc (m)	14.0		15.5		16.5		16.0		15.0			

* Water samples taken

Table 11

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

KALAMAILKA B

March 18, 1970

Sample Depth (m)	STATION NUMBER (WEST TO EAST)									
	1		2		3*		4		5	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	12.5	3.9	12.4	3.9	12.6	3.8	12.5	3.8	12.6	3.9
3	"	"	"	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	"	"	"	"
18	"	"	"	"	"	"	"	"	"	"
21	"	"	"	"	"	"	"	"	"	"
24	"	"	"	"	"	"	"	"	"	"
27	"	"	"	"	"	"	"	"	"	"
30	"	"	"	"	"	"	"	"	"	"
40	"	"	"	"	"	"	"	"	"	"
50	"	"	"	"	"	"	"	"	"	"
60	"	"	"	"	"	"	"	"	"	"
70	"	"	"	"	"	"	"	"	"	"
80	"	"	"	"	"	"	"	"	"	"
85	"	"	"	"	"	"	"	"	"	"
90	"	"	"	"	"	"	"	"	"	"
Secchi Disc (m)	13.5	13.5	13.5	13.5	12.0	13.0	13.0	13.0	13.0	13.0

* Water samples taken

Table 12

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

KALAMAILKA C

March 18, 1970

Sample Depth (m)	S T A T I O N N U M B E R (W E S T T O E A S T)											
	1			2		3*		4		5		
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	12.6	3.8	12.6	3.8	12.6	3.8	12.6	3.8	12.6	3.6	NO	STATION 5
3	"	"	"	"	"	"	"	"	"	"		
6	"	"	"	"	"	"	"	"	"	"		
9												
12												
15												
18												
21												
24												
27												
30												
40												
Secchi Disc. (m)	10.0		11.0		10.5		10.0		10.0			

* Water samples taken

Table 13

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY
WOODS LAKE, NORTH-SOUTH LONGITUDINAL

March 20, 1970

Sample Depth (m)	S T A T I O N N U M B E R (W E S T T O E A S T)										5 *	
	1 *		2		3 *		4		5 *			
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	13.0	3.8	13.1	3.8	13.0	3.7	12.9	3.5	13.0	3.5		
3	"	"	"	"	"	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	"	"	"	"	"	"
18	"	"	"	"	"	"	"	"	"	"	"	"
21	"	"	"	"	"	"	"	"	"	"	"	"
24	"	"	"	"	"	"	"	"	"	"	"	"
27	"	"	"	"	"	"	"	"	"	"	"	"
30	"	"	"	"	"	"	"	"	"	"	"	"
Secchi Disc (m)	3.0		2.5		3.0		3.0		3.0		3.0	

* Water samples taken

Table 14

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

SKAHA A

March 21, 1970

Sample Depth (m)	S T A T I O N N U M B E R (W E S T T O E A S T)									
	1		2*		3.		4		5	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	13.2	3.7	13.2	3.7	13.2	3.7	13.2	3.7	13.2	3.7
3	"	"	"	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	"	"	"	"
18	"	"	"	"	"	"	"	"	"	"
21	"	"	"	"	"	"	"	"	"	"
24	"	"	"	"	"	"	"	"	"	"
25	"	"	"	"	"	"	"	"	"	"
27	"	"	"	"	"	"	"	"	"	"
30	"	"	"	"	"	"	"	"	"	"
40	"	"	"	"	"	"	"	"	"	"
50	"	"	"	"	"	"	"	"	"	"
Secchi Disc (m)	5.0		5.0		5.0		4.5		4.5	

* Water samples taken

Table 15

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

SKAHA B

March 22, 1970

Sample Depth (m)	S T A T I O N N U M B E R (W E S T T O E A S T)									
	1		2*		3		4		5	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	13.2	3.7	13.2	3.7	13.3	3.7	13.3	3.7	13.2	3.7
3			"	"	"	"	"	"	"	"
6			"	"	"	"	"	"	"	"
9			"	"	"	"	"	"	"	"
12			"	"	"	"	"	"	"	"
15			"	"	"	"	"	"	"	"
18			"	"	"	"	"	"	"	"
21			"	"	"	"	"	"	"	"
24			"	"	"	"	"	"	"	"
25	13.2	3.7	"	"	"	"	"	"	"	"
30			"	"	"	"	"	"	"	"
35			"	"	"	"	"	"	"	"
40			"	"	"	"	"	"	"	"
45			"	"	"	"	"	"	"	"
Secchi Disc (m)	4.0		4.5		4.0		4.5		5.0	

* Water samples taken

Table 16

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

SKAHA C

March 22, 1970

Sample Depth (m)	STATION NUMBER (WEST TO EAST)									
	1		2		3*		4		5	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	13.2	3.7	13.2	3.7	13.2	3.7	13.2	3.7	13.3	3.7
3	"	"	"	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"	"	"
12			"	"	"	"	"	"	"	"
15			"	"	"	"	"	"	"	"
18			"	"	"	"	"	"	"	"
21			"	"	"	"	"	"	"	"
25									"	"
30							13.2	3.7	"	"
35							"	"	"	"
40							"	"	"	"
Secchi Disc (m)	3.5		3.5		4.0		3.5		---	

* Water samples taken

Table 17

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OSOYOOS A

March 23, 1970

Sample Depth (m)	S T A T I O N N U M B E R (W E S T T O E A S T)									
	1		2*		3		4		5	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0	13.1	4.0	13.0	4.0	13.0	4.0	12.9	4.0	12.9	4.0
3	"	"	"	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"	"	"	"
9	"	"	"	"	"	"	"	"	"	"
12	"	"	"	"	"	"	"	"	"	"
15	"	"	"	"	"	"	"	"	"	"
20	"	"	"	"	"	"	"	"	"	"
25	"	"	"	"	"	"	"	"	"	"
30	"	"	"	"	"	"	"	"	"	"
35	"	"	"	"	"	"	"	"	"	"
40	"	"	"	"	"	"	"	"	"	"
45	"	"	"	"	"	"	"	"	"	"
50	"	"	"	"	"	"	"	"	"	"
55	"	"	"	"	"	"	"	"	"	"
Secchi Disc (m)	3.0		3.5		3.5	4.5	3.5		3.5	

* Samples taken for water analysis

Table 18

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN A(2)

March 24, 1970

Sample Depth (m)	S T A T I O N N U M B E R (C E N T E R O N L Y)								5	
	1		2		3*		4			
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0					13.1	4.0				
5										
10										
15										
20										
25										
30										
35										
50										
65					13.1	4.0				
85										
Secchi Disc (m)							10.0			

* Water samples taken

Table 19

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN B(2)

March 24, 1970

Sample Depth (m)	S T A T I O N N U M B E R (C E N T E R O N L Y)										5	
	1		2		3*		4		5		5	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0					13.1	4.0						
5					"	"						
10					"	"						
15					"	"						
20					"	"						
50					"	"						
80					"	"						
110					"	"						
135					"	"						
Secchi Disc (m)											13.5	

* Water samples taken

Table 20

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN C(2)

March 24, 1970

Sample Depth (m)	STATION NUMBER (CENTER ONLY)							
	1		2		3*		4	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0					13.1	4.0		
5					"	"		
10					"	"		
15					"	"		
20					"	"		
60					"	"		
80					"	"		
100					"	"		
140					"	"		
195					"	"		
Secchi Disc (m)						14.5		

* Water samples taken

Table 21

TEMPERATURE, DISSOLVED OXYGEN AND SECCHI DISC READINGS--OKANAGAN SURVEY

OKANAGAN D(2)

March 25, 1970

Sample Depth (m)	STATION NUMBER (CENTER ONLY)									
	1		2		3*		4		5	
	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)	DO (mg/l)	T (°C)
0					13.1	4.0				
5					"	"				
10					"	"				
15					"	"				
20					"	"				
70					"	"				
120					"	"				
175					"	"				
215					"	"				
Secchi Disc (m)							16.0			

* Water samples taken

Table 22

ANALYSES OF SAMPLES COLLECTED AT VARIOUS TRANSECTION LOCATIONS
AND DEPTHS FROM LAKE OKANAGAN

Transec- tion Location	Depth m	NITROGEN ANALYSES		PHOSPHATE ANALYSES	
		Nitrate mg NO ₃ /l	Total Nitrogen mg N/l	Orthophosphate mg PO ₄ /l	Total Phosphate mg PO ₄ /l
A 2	0	0.10	0.26	<0.01	0.02
	5	0.10	0.14	<0.01	0.03
	10	0.12	0.14	<0.01	0.02
	15	0.11	0.24	<0.01	0.02
	20	0.11	0.31	<0.01	0.02
	35	0.11	0.29	<0.01	0.02
	50	0.11	0.42	<0.07	0.03
	65	0.11	0.10	<0.01	0.01
	85	0.11	0.34	<0.01	0.02
B 3	0	0.13	0.21	<0.01	<0.01
	5	0.13	0.30	<0.01	<0.01
	10	0.13	0.44	<0.01	0.02
	15	0.12	0.23	<0.01	<0.01
	50	0.13	0.20	<0.01	<0.01
	70	0.13	0.14	<0.01	<0.01
	110	0.13	0.51	<0.01	<0.01
	130	0.13	0.44	<0.01	<0.01
C 3	0	0.18	0.21	<0.01	<0.01
	5	0.14	0.18	<0.01	<0.01
	10	0.14	0.16	<0.01	<0.01
	15	0.14	0.23	<0.01	<0.01
	20	0.15	0.19	<0.01	<0.01
	40	0.16	0.24	<0.01	<0.01
	60	0.87	0.18	0.01	0.01
	100	0.15	0.25	<0.01	<0.01
	140	0.16	0.09	<0.01	0.02
	195	0.19	0.20	<0.01	0.02
D 3	0	0.27	0.31	0.02	0.02
	5	0.15	0.43	0.02	0.02
	10	0.19	0.77	0.02	0.02
	15	0.15	0.27	0.02	0.02
	20	0.15	0.13	0.03	0.02
	70	0.14	< 0.01	0.03	0.02
	120	0.16	< 0.01	0.02	0.02
	170	0.16	0.13	0.02	0.02
	215	0.17	< 0.01	0.03	0.03
E 3*	0	0.07	0.15		
	5	0.08	0.16		
	10	0.15	0.17		

Table 22 (continued)

- 2 -

Transec- tion Location	Depth m	NITROGEN ANALYSES		PHOSPHATE ANALYSES	
		Nitrate mg NO ₃ /l	Total Nitrogen mg N/l	Orthophosphate mg PO ₄ /l	Total Phosphate mg PO ₄ /l
E 3*	15	0.07	0.10	<0.01	
	20	0.09	0.05	<0.01	
	60	0.09	0.14		
	100	0.09	0.15		
	140	0.09	0.13	<0.01	
	180	0.09	0.08		0.02
	225	0.10	0.11		
F 3	0	0.13	0.43	0.01	0.03
	5	0.15	0.26	0.01	0.04
	10	0.14	0.41	0.01	0.03
	15	0.13	0.05	0.01	0.04
	20	0.15	0.03	0.01	0.04
	45	0.14	<0.01	0.01	0.03
	70	0.15	0.09	0.01	0.03
	95	0.16	0.03	0.01	0.03
	120	0.16	0.02	0.01	0.04
	135	0.16	0.14	0.01	0.04
G 3	0	0.19	0.28	<0.01	0.04
	5	0.01	0.20	<0.01	0.04
	10	0.01	0.21	<0.01	0.04
	15	0.02	0.17	<0.01	0.04
	20	0.01	0.43	<0.01	0.04
	24	<0.01	0.40	<0.01	0.04
	28	0.03	0.56	<0.01	0.05
H 3	0	0.04	1.03	<0.01	0.06
	5	0.05	0.36	<0.01	0.06
	10	0.03	0.27	<0.01	0.06
	15	0.05	0.59	<0.01	0.06
	20	0.05	0.38	<0.01	0.06
	40	0.07	0.05	<0.01	0.06
	60	0.09	0.02	<0.01	0.09
	85	0.09	0.07	0.01	0.09
Average		0.126	0.232	<0.012	<0.029

* Analyses by B. C. Research

Table 22 (continued)

- 2 -

Transec- tion Location	Depth m	NITROGEN ANALYSES		PHOSPHATE ANALYSES	
		Nitrate mg NO ₃ /l	Total Nitrogen mg N/l	Orthophosphate mg PO ₄ /l	Total Phosphate mg PO ₄ /l
E 3*	15	0.07	0.10	<0.01	
	20	0.09	0.05	<0.01	
	60	0.09	0.14		
	100	0.09	0.15		
	140	0.09	0.13	<0.01	
	180	0.09	0.08		0.02
	225	0.10	0.11		
F 3	0	0.13	0.43	0.01	0.03
	5	0.15	0.26	0.01	0.04
	10	0.14	0.41	0.01	0.03
	15	0.13	0.05	0.01	0.04
	20	0.15	0.03	0.01	0.04
	45	0.14	<0.01	0.01	0.03
	70	0.15	0.09	0.01	0.03
	95	0.16	0.03	0.01	0.03
	120	0.16	0.02	0.01	0.04
	135	0.16	0.14	0.01	0.04
G 3	0	0.19	0.28	<0.01	0.04
	5	0.01	0.20	<0.01	0.04
	10	0.01	0.21	<0.01	0.04
	15	0.02	0.17	<0.01	0.04
	20	0.01	0.43	<0.01	0.04
	24	<0.01	0.40	<0.01	0.04
	28	0.03	0.56	<0.01	0.05
H 3	0	0.04	1.03	<0.01	0.06
	5	0.05	0.36	<0.01	0.06
	10	0.03	0.27	<0.01	0.06
	15	0.05	0.59	<0.01	0.06
	20	0.05	0.38	<0.01	0.06
	40	0.07	0.05	<0.01	0.06
	60	0.09	0.02	<0.01	0.09
	85	0.09	0.07	<0.01	0.09
Average		0.126	0.232	<0.012	<0.029

* Analyses by B. C. Research

Table 23

ANALYSES OF SAMPLES COLLECTED AT VARIOUS TRANSECTION LOCATIONS
AND DEPTHS, FROM KALAMALKA LAKE

Transec- tion Location	Depth m	NITROGEN ANALYSES		PHOSPHATE ANALYSES	
		Nitrate mg NO ₃ /l	Total Nitrogen mg N/l	Orthophosphate mg PO ₄ /l	Total Phosphate mg PO ₄ /l
A 4	0	0.11	0.30	<0.01	0.02
	5	0.11	0.17	<0.01	0.01
	10	0.11	0.34	<0.01	0.01
	15	0.11	--	<0.01	0.02
	20	0.11	0.30	<0.01	0.01
	50	0.11	0.29	<0.01	0.01
	75	0.11	0.23	<0.01	0.03
	100	0.13	0.26	0.03	0.01
	120	0.15	0.27	0.03	0.01
B 3	0	0.11	0.26	<0.01	0.02
	5	0.11	0.20	<0.01	0.01
	10	0.10	0.22	<0.01	0.02
	15	0.11	0.27	<0.01	0.02
	20	0.11	0.18	<0.01	0.01
	45	0.11	0.26	<0.01	0.01
	70	0.11	0.23	<0.01	0.01
	90	0.11	0.40	<0.01	0.02
C	0	0.11	0.25	<0.01	0.01
	10	0.12	0.30	<0.01	0.01
	20	0.12	0.24	<0.01	0.01
	28	0.12	0.30	<0.01	0.02
Average		0.114	0.264	<0.012	0.0143

Table 24

*
ANALYSES OF SAMPLES COLLECTED AT VARIOUS TRANSECTION LOCATIONS
AND DEPTHS, FROM WOODS LAKE

Transec- tion Location	Depth m	NITROGEN ANALYSES		PHOSPHATE ANALYSES	
		Nitrate mg NO ₃ /l	Total Nitrogen mg N/l	Orthophosphate mg PO ₄ /l	Total Phosphate mg PO ₄ /l
1	0	0.04	0.53	0.13	0.22
	10	0.04	0.38	0.13	0.20
	20	0.05	0.35	0.12	0.20
3	0	0.10	0.45	0.11	0.23
	5	0.10	0.56		0.21
	10	0.06	0.35		0.22
	15	0.10	0.56		0.22
	20	0.10	0.45		0.21
	25	0.10	0.35		0.22
	30	0.06	0.30		0.22
5	0	0.05	0.42	0.14	0.21
	23	0.42	0.42	0.13	0.20
Average		0.102	0.427	0.125	0.213

* Analyses by B. C. Research

Table 25

ANALYSES OF SAMPLES COLLECTED AT VARIOUS TRANSECTION LOCATIONS
AND DEPTHS, FROM SKAHA LAKE

Transec- tion Location	Depth m	NITROGEN ANALYSES		PHOSPHATE ANALYSES	
		Nitrate mg NO ₃ /l	Total Nitrogen mg N/l	Orthophosphate mg PO ₄ /l	Total Phosphate mg PO ₄ /l
A 2	0	0.39	0.18	0.03	0.06
	5	0.38	0.27	0.03	0.06
	10	0.38	0.08	0.04	0.10
	15	0.39	0.18	0.03	0.08
	20	0.40	0.26	0.03	0.07
	30	0.36	0.32	0.04	0.11
	40	0.38	0.30	0.04	0.11
	50	0.38	0.26	0.03	0.07
				0.0376	0.072
B 2	0	0.38	0.19	0.04	0.10
	5	0.38	0.30	0.04	0.09
	10	0.43	0.40	0.04	0.10
	15	0.39	0.70	0.04	0.10
	20	0.40	0.40	0.04	0.08
	30	0.38	0.41	0.04	0.09
	38	0.40	0.38	0.04	0.14
	45	0.40	0.45	0.04	0.4
C 3	0	0.28	0.38	0.03	0.11
	5	0.20	0.40	0.04	0.12
	10	0.20	0.22	0.02	0.11
	15	0.19	0.20	0.02	0.10
	20	0.17	0.30	0.02	0.14
	30	0.15	0.37	0.01	0.12
	40	0.12	0.47	0.01	0.10
Average		0.327	0.323	0.032	0.097
				10.6 mg/l	

equivalent
as 74.3 mg/l N/l

NO₃-N = 4.4 mg/l

Table 26

ANALYSES OF SAMPLES COLLECTED AT VARIOUS TRANSECTION LOCATIONS
AND DEPTHS, FROM LAKE OSOYOOS

Transec- tion Location	Depth m	NITROGEN ANALYSES		PHOSPHATE ANALYSES	
		Nitrate mg NO ₃ /l	Total Nitrogen mg N/l	Orthophosphate mg PO ₄ /l	Total Phosphate mg PO ₄ /l
2	0	0.18	0.24	0.01	0.10
	5	0.19	0.33	0.01	0.10
	10	0.19	0.21	0.01	0.08
	15	0.19	0.51	0.01	0.09
	20	0.19	0.29	0.01	0.09
	30	0.20	0.30	0.01	0.10
	40	0.20	0.24	0.01	0.08
	50	0.23	0.35	0.01	0.09
Average		0.196	0.309	0.01	0.091

Table 27

ANALYSES OF SAMPLES COLLECTED AT VARIOUS TRANSECTION LOCATIONS
AND DEPTHS, FROM OKANAGAN LAKES,
BY WATER QUALITY LABORATORY, DEPARTMENT OF ENERGY, MINES AND RESOURCES, CALGARY
AND BY B. C. RESEARCH

Transec- tion Location	Depth m	NITROGEN ANALYSES				PHOSPHATE ANALYSES			
		Nitrate mg NO ₃ /l		Total Nitrogen mg N/l		Orthophosphate mg PO ₄ /l		Total Phosphate mg PO ₄ /l	
		DEMR	BCR	DEMR	BCR	DEMR	BCR	DEMR	BCR
OK; B 3	0	0.13	0.14	0.21	0.06				
	5	0.13	0.09	0.30	0.06				
	10	0.13	0.11	0.44	0.24				
	15	0.12	0.08	0.23	0.17				
	50	0.13	0.09	0.20	0.36				
	70	0.13	0.08	0.14	0.13				
	90	0.13	0.16	0.51	0.18				
	130	0.13	0.08	0.44	0.06				
Average		0.13	0.10	0.31	0.16				
OK; C 3	0	0.18	0.08	0.21	0.06				
	5	0.14	0.07	0.18	0.05				
	10	0.14	0.08	0.16	0.07			<0.01	0.02
	15	0.14	0.05	0.23	0.08			<0.01	0.02
	20	0.15	0.08	0.19	0.05	<0.01	<0.01	<0.01	0.03
	40	0.16	0.09	0.24	0.16			<0.01	0.02
	60	0.87	0.09	0.18	0.18			0.01	0.02
	100	0.15	0.08	0.25	0.08	<0.01	<0.01	<0.01	0.02
Average		0.24	0.08	0.21	0.09				

Table 28

ANALYSES FOR CONDUCTANCE--OKANAGAN SURVEY

Lake	Transect Station No.	Depth (m)	Conductance (micromhos/cm) (cell constant 0.196)
Okanagan	A2	0	217
		5	216
		10	210
		15	216
		20	214
		35	225
		50	206
		80	220
		97	225
Okanagan	B3	0	212
		5	214
		10	208
		15	214
		20	216
		50	218
		70	210
		90	221
		130	210
Okanagan	C3	0	210
		5	192
		10	217
		15	196
		20	204
		40	218
		60	219
		100	200
		140	200
Okanagan	D3	0	231
		5	227
		10	225
		15	208
		20	231
		60	229
		90	235
		120	239
		160	212
		200	211

Table 28

- 2 -

Lake	Transect Station No.	Depth (m)	Conductance (Micromhos/cm) (Cell constant 0.196)
Okanagan	E3	0	249
		5	245
		10	245
		15	245
		20	253
		60	237
		100	235
		140	239
		180	237
		225	239
Woods	1	0	235
		10	119
		20	239
Woods	3	0	231
		5	218
		10	249
		15	247
		20	109
		25	239
		30	233
Woods	5	0	235
		23	249

Figure 1
DEPTH PROFILES

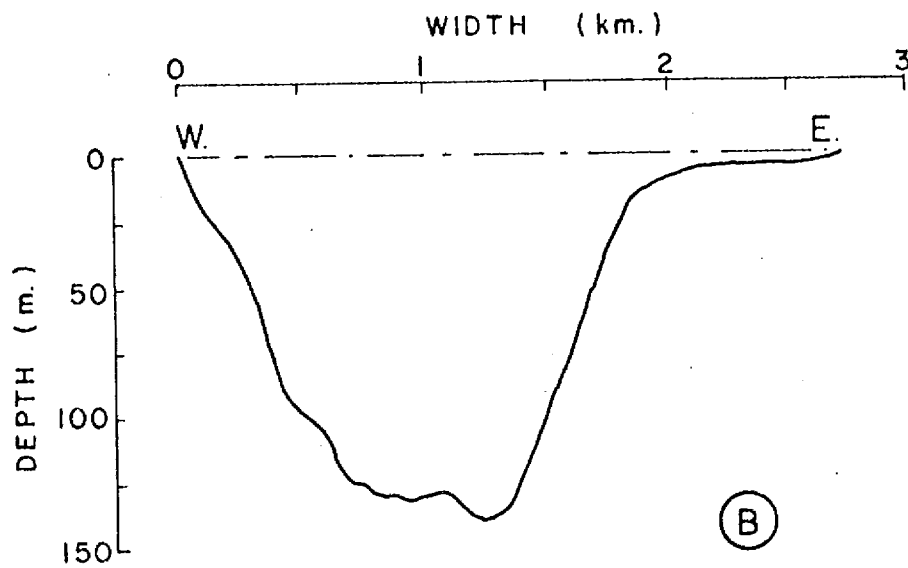
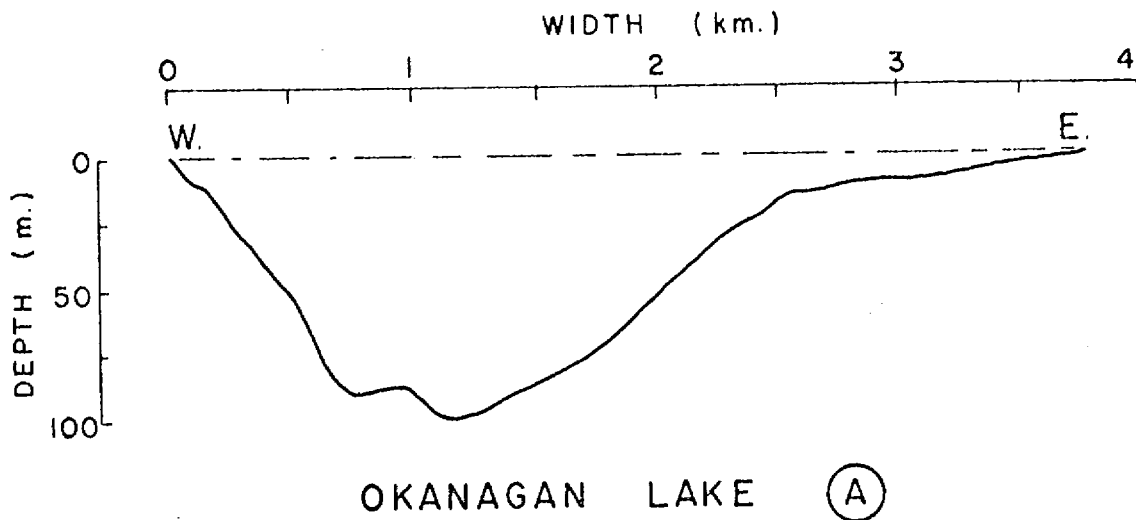


Figure 2
DEPTH PROFILES

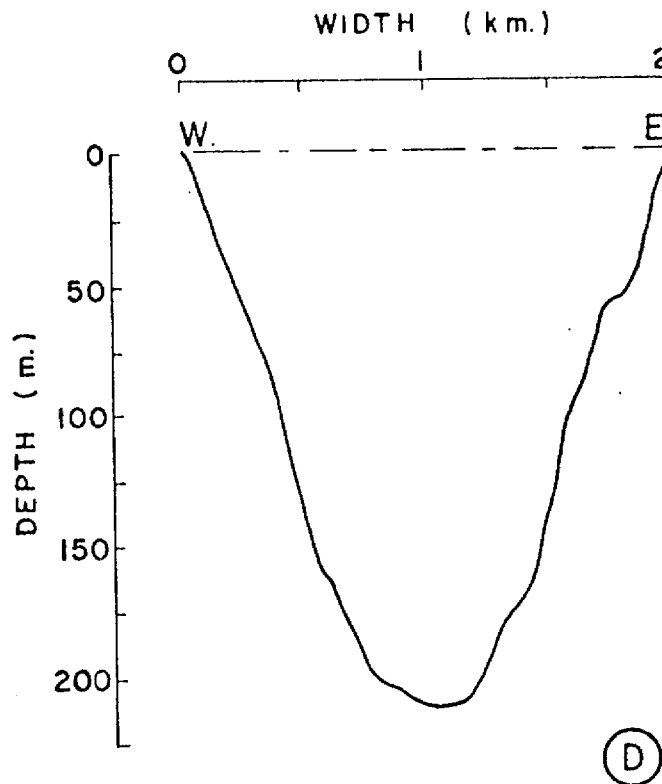
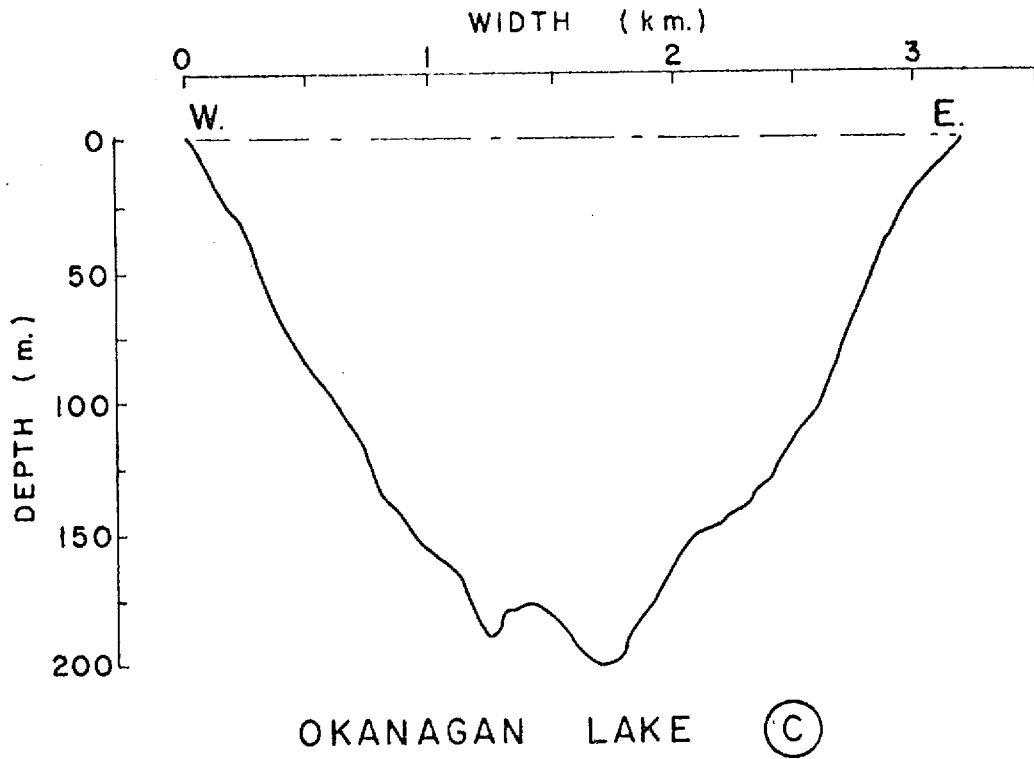


Figure 3
DEPTH PROFILES

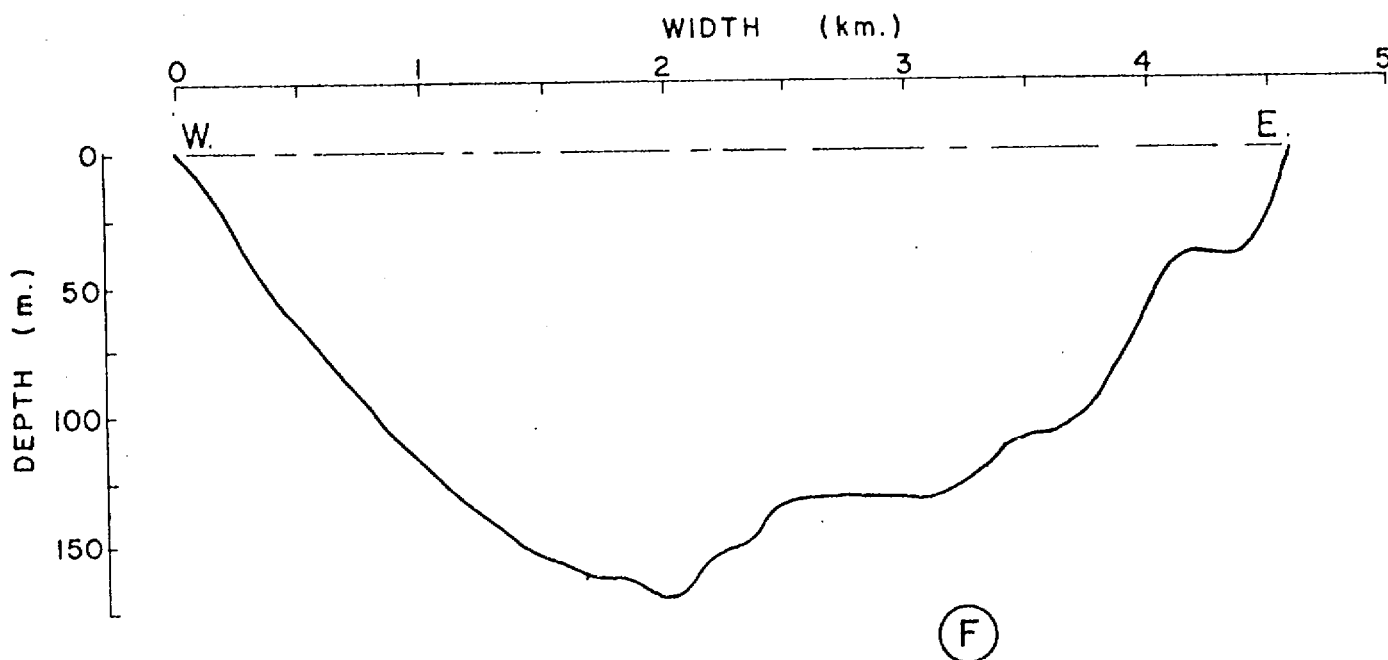
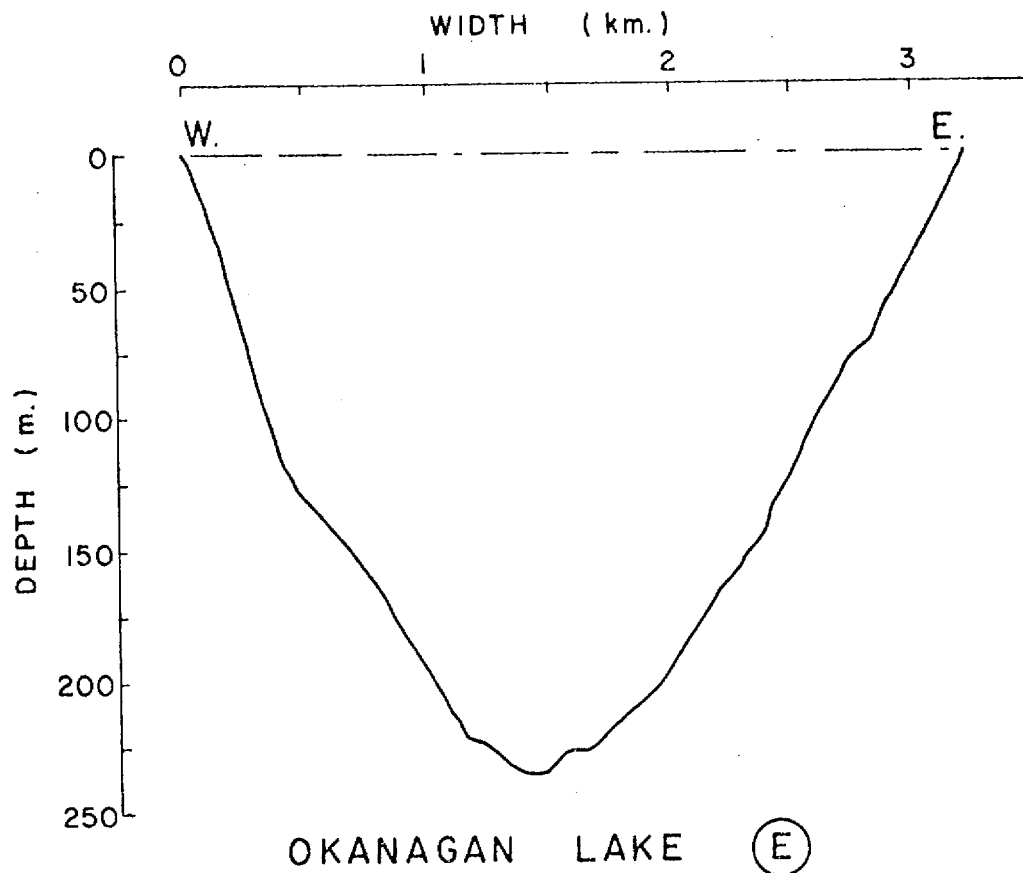
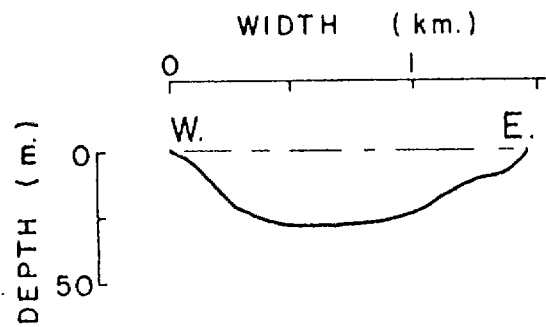
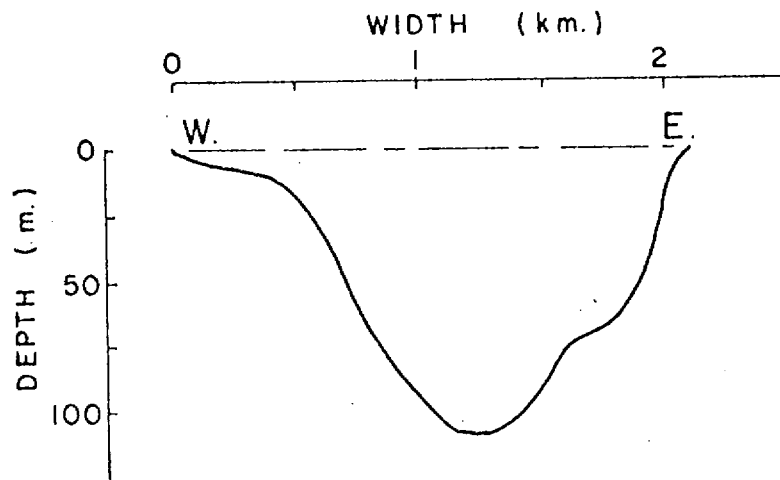


Figure 4
DEPTH PROFILES



OKANAGAN LAKE (G)



(H)

Figure 5
DEPTH PROFILES

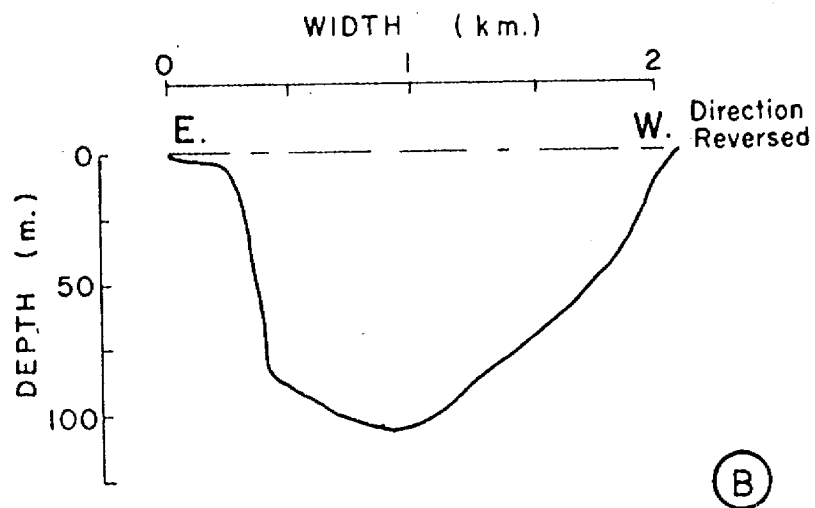
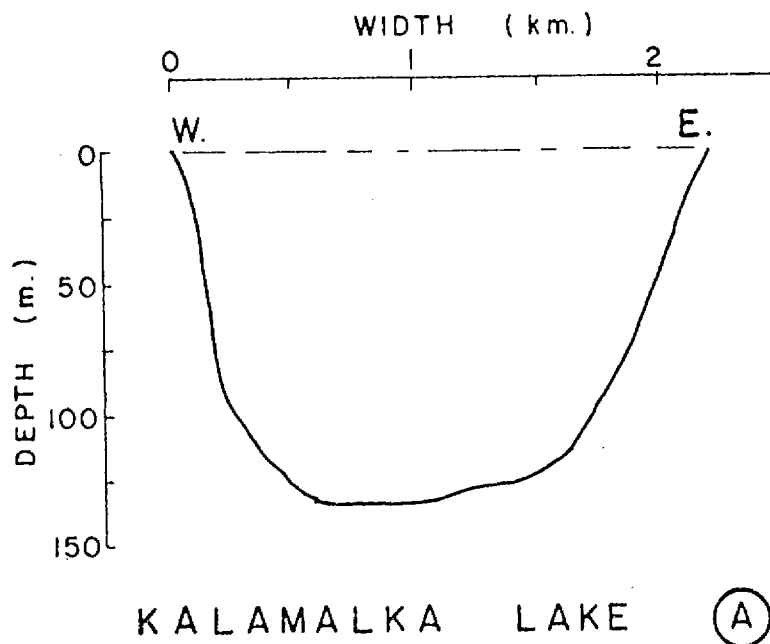


Figure 6
DEPTH PROFILES

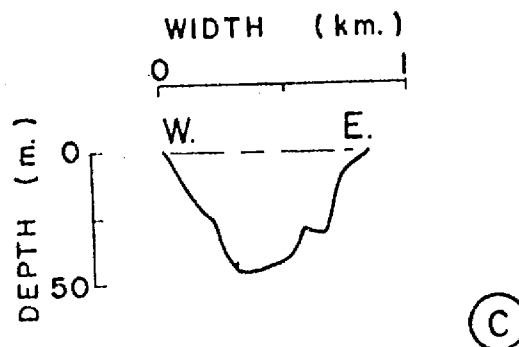
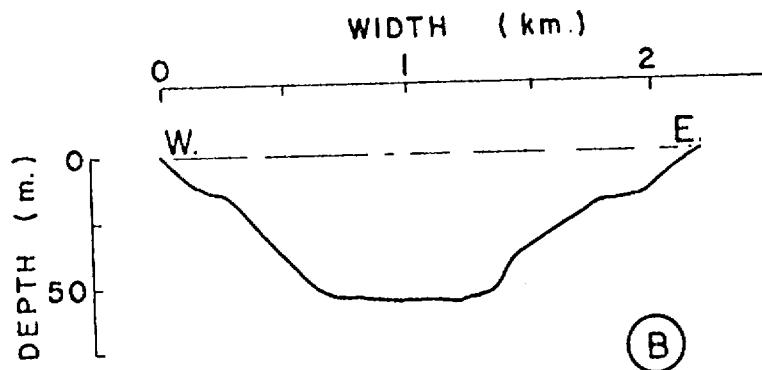
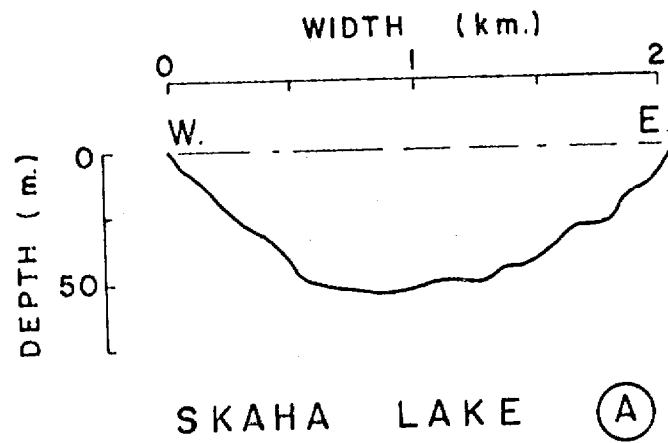
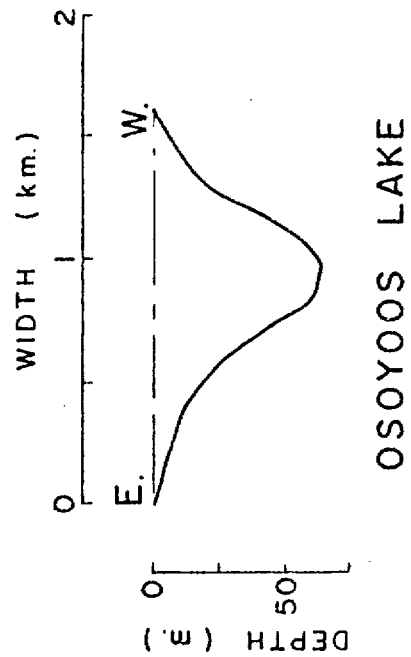
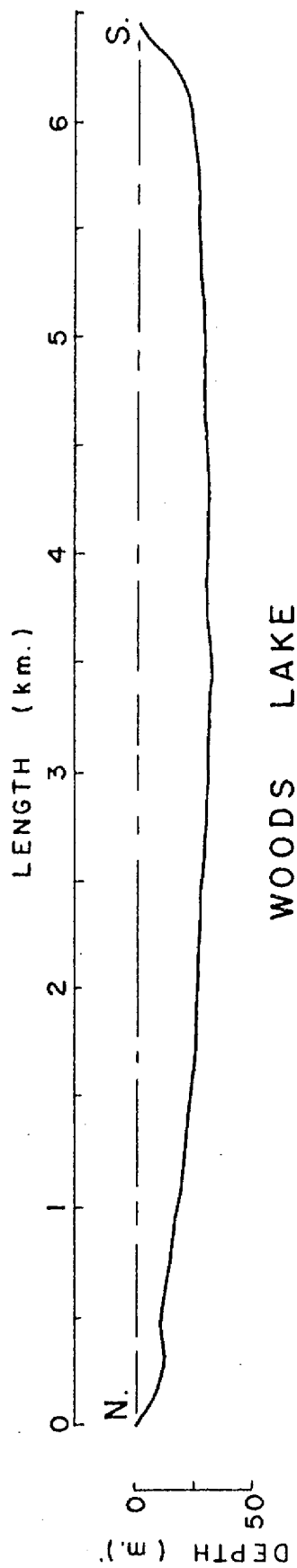


Figure 7
DEPTH PROFILES



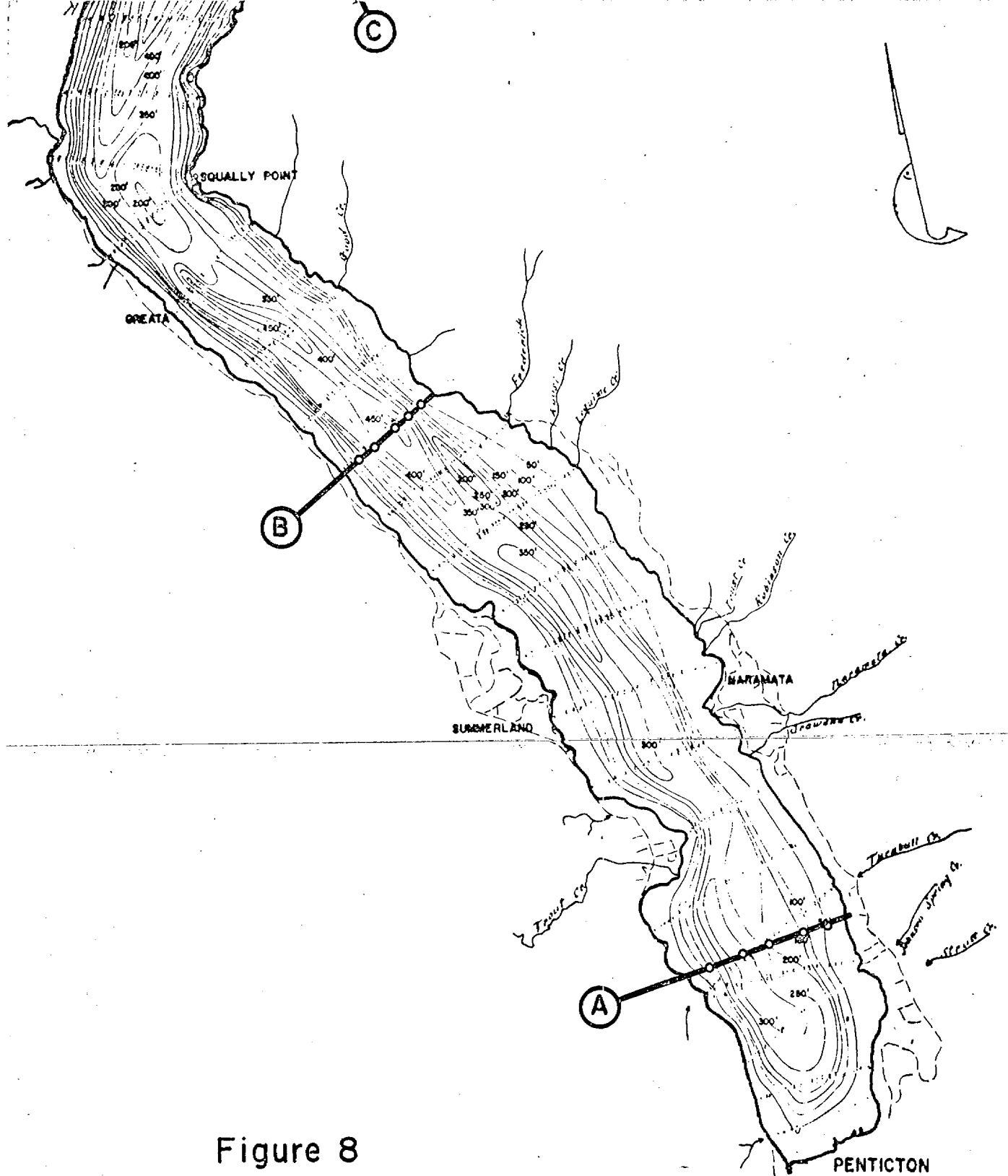
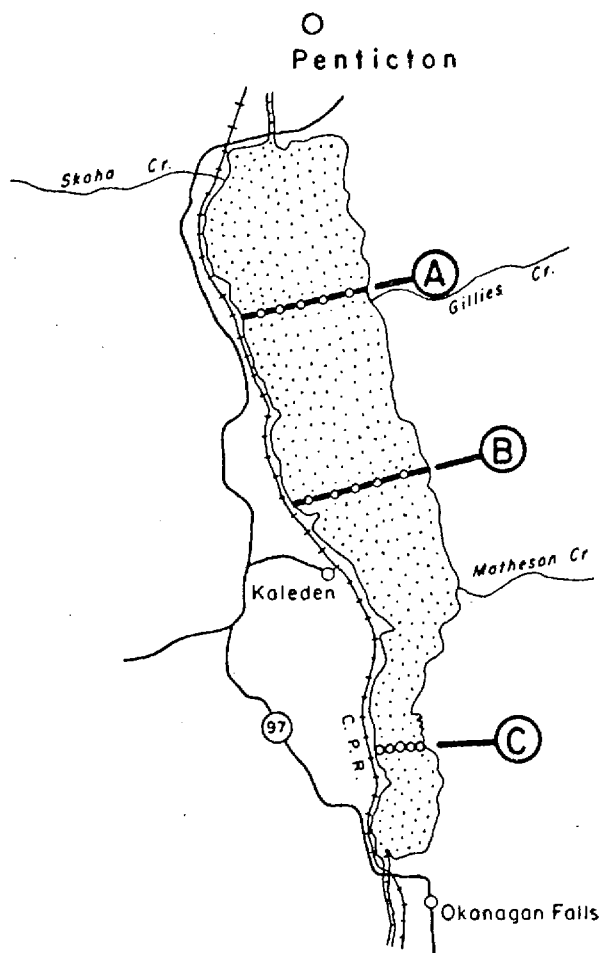
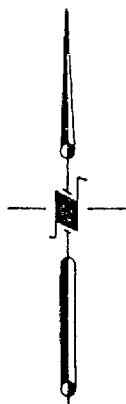


Figure 8
TRANSECT LOCATIONS
OKANAGAN SURVEY

Figure 9
TRANSECT LOCATIONS - OKANAGAN SURVEY

SKAHA LAKE

1" = 2 mi.



OSOYOOS LAKE

1" = 2 mi.

