

# **FISH UTILIZATION OF LAKES IN EASTERN NPR-A - 1999**

## **Final Data Report**

**January 2000**



**Prepared by:**

**MJM Research  
1012 Shoreland Drive  
Lopez Island, WA**

**Prepared for:**

**ARCO Alaska, Inc.  
700 G Street  
Anchorage, AK**

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## **FISH UTILIZATION OF LAKES IN EASTERN NPR-A - 1999**

### **INTRODUCTION**

ARCO Alaska Inc. has proposed to explore for oil within the eastern portion of the National Petroleum Reserve-Alaska (NPR-A). Exploration will lead to the crossing rivers and lakes with ice roads and withdrawal of water from lakes to support both industrial and domestic needs.

During review of exploration, and potentially development, permits, information will be required on the biological sensitivity of lakes in the region. The study was designed to provide physical and biological information on these lakes to understand their use by various fish species. In addition, the results of the survey can be used, in concert with previous surveys within the area, to direct any future investigations that may be needed.

The objectives of the study are to document fish presence and habitat use in eastern NPR-A lakes. Selected lakes include those that may be used to support exploration. The 1999 eastern NPR-A study area lies between the Nekhelik Channel of the Colville River and the confluence of Fish and Judy creeks (Figure 1).

The 1999 field effort was the first sampling in the eastern NPR-A Exploration Area since 1979 (McElderry and Craig 1981). In that study, the objective was to locate arctic cisco spawning sites in or near the Colville River. Three lakes in NPR-A were sampled, but arctic cisco spawning sites were not located. The sampling identified broad whitefish, least cisco, round whitefish and arctic grayling from the study region. An additional lake was sampled by Netsch et al. (1977), but fish were not caught.

### **METHODS**

#### **SAMPLE AREA**

Sampling was conducted in eastern NPR-A in or near potential exploration regions identified by ARCO Alaska (Figure 1). Four of the regions, Moose's Tooth, Rendezvous, Lookout and Clover, are wholly within NPR-A. Two of the regions, Nanuk and Nekhelik, are primarily in the Colville Delta, but have portions within NPR-A. Only results from lakes within NPR-A are covered in this report. Location information for each lake is presented in Table 1.

#### **FIELD SAMPLING**

The biological survey consisted of biological sampling with gill nets combined with physical

measurements. The gear type used was dictated by the specific objectives associated with each sampled lake.

Lakes were sampled with short-duration gill net sets using a multimesh gill net (120 feet long, six panels of variable mesh, mesh size ranging from 1 to 3.5 inches stretched mesh). These nets have been previously used to collect inventory-level data from lakes throughout the Colville Delta and nearby areas. The sets were kept to a short duration to minimize the chance for entangling waterfowl and to minimize fish mortality. Fish captured were measured and released if not severely injured. Duration of each set was recorded to allow calculation of catch rates.

Water quality parameters were measured in the studied lakes to assess habitat conditions and provide information on the suitability of the water for domestic and industrial uses. Water quality measurements included water temperature, specific conductance or salinity, dissolved oxygen, and pH. In many of the lakes, a water sample was taken and sent to Northern Test Labs for more detailed analysis. The laboratory analysis included determining levels of chloride, sodium, calcium, magnesium, hardness and total dissolved solids (TDS).

Bathymetric data were collected to allow estimating lake volume. Depths were taken with an Eagle SupraPro ID depth sounder. Transect positions were determined by marking the beginning and end locations of the transects on base maps of the lakes. Individual depth measurements were located with a hand-held GPS receiver while traversing the lake with either a boat or float tube. The readings were converted to distance measurements and the resulting points were plotted on the known location of the transect.

The lake volume is estimated by applying the formula for the volume of a cone to the surface area and maximum depth of each lake. The surface area is obtained from a GIS base map using the USGS 1:63,360 scale quads. The amount allowed for winter water withdrawal is estimated as 15% of the volume of the lake deeper than 7 feet. The volume estimation is a rough estimate, but is currently accepted for a first estimate for a one-time use. For lakes that are proposed for long-term use, volume is estimated based on contour maps of the lake.

The lakes are grouped into regions that correspond to the exploration regions identified by ARCO Alaska for 1999 (Figures 2-4). The lakes are not necessarily within the boundaries of each region, but are nearby or near potential ice road routes. Since sampling was conducted prior to final exploration planning, some lakes may not appear close to the final exploration configuration.

Water quality parameters were measured in the studied lakes to assess habitat conditions and provide information on the suitability of the water for domestic and industrial uses.

## LAKE SUMMARIES

When possible, this report uses lake numbering based on the Emergency Response Grid (ERG) used by Alaska Clean Seas, the response organization for the North Slope oilfield region. This

numbering system allows the lakes to be quickly located on area maps. The lake number corresponds to the grid within which the lake occurs, along with a sequence number. In most cases, there is only one lake within a grid. Where two or more lakes occur within the same grid, the lakes are numbered sequentially beginning from the west and south sides of the grid. However, the ERG ends just west of the Colville Delta, thus is not useful for most sampling in NPRA.

For lakes not covered by the ERG, the lake number uses a researcher/year code. The lake number contains several pieces of information, including the code of the sampler and the year of sampling.

Sampler Code:

MC = McElderry and Craig (1981); sampling in 1979

B = Bendock and Burr (1986); sampling in 1985

L = Lobdell; water quality sampling in 1991-1999

M = Moulton; fish sampling in 1999

First Two Numerals:

Year of Initial Sampling

(if Moulton sampled a lake previously sampled by McElderry and Craig, then the  
McElderry and Craig lake number is used)

Last Two Numerals:

Numbers from 1 to 99 used to identify the individual lake sampled within a given year

Information contained for each surveyed lake (if measured) includes:

1. A diagram of the lake,
2. Other names utilized for the same lake,
3. Lake location, in latitude/longitude,
4. The USGS quadrangle sheet and the township and range in which the lake is situated
5. Habitat classification,
6. Surface area in acres, obtained from USGS digital maps,
7. Maximum depth in feet,
8. Presence or absence of an outlet,
9. pH,
10. Calculated lake volume and volume of water permitted for winter withdrawal,
11. Water quality measurements,
12. Catch record, including gear used, date sampled, species caught and size range,
13. Where appropriate data exist, the length frequency of dominant species is plotted,
14. The depth distribution based on bathymetric transects that were recorded.

Five different lake types are defined, based primarily on the potential for access by fish.  
Definitions for the lake types are as follows:

**Perched (Frequent Flooding)** = Perched lake with an obvious high water channel, likely subject to annual flooding.

**Perch (Infrequent Flooding)** = Perched lake with no obvious high water channel, likely subject to flooding on an infrequent basis (every five years or more).

**Drainage** = Drainage Lake, a lake that is part of a defined drainage system, i.e. there is an active connection to a creek.

**Oxbow** = Oxbow lake, formed from abandoned river channels.

**Tundra** = Tundra Lake, a thaw lake not within or connected to the Colville Delta, little potential for fish access on a regular basis.

## **RESULTS AND DISCUSSION**

### **Biological Observations**

Fish sampling was conducted in 52 lakes in eastern NPR-A (Table 2). Broad whitefish, least cisco and arctic grayling were the only species captured in the NPA-A lakes, which is consistent with earlier reports from the region (Netsch et al. 1977, McElderry and Craig 1981). Lakes in the Nanuk and Nechelik regions along the Colville River consistently produced fish, while those in other regions were less likely to be fish bearing. Most of the fish occurrence was in lakes along the major drainages, such as Fish Creek, Judy Creek and the Ublutuoch River (Figures 5 to 8). A list of fish captured by lake is presented in Table 3. Length information is presented for each fish-bearing lake in the Lake Summaries.

In the Moose's Tooth, Rendezvous, Lookout and Clover regions, only 24% of the surveyed lakes contained fish. In contrast, over 85% of the perched and drainage lakes sampled with similar methods in the Colville Delta supported fish (Moulton 1998). Most of the fish presence in the NPA-A lakes appears to be a function of ready access from fish-bearing streams. One exception to this pattern was lake M9917, in the Rendezvous region, which contained arctic grayling. In this case, there may be a seasonal connection to Judy Creek, which is 1.8 miles away (Figure 6).

### **Water Quality Measurements**

Water quality parameters measured in the studied lakes are presented Table 4. During the survey (Jul 9 to Aug 4, 1999), water temperature averaged 12.6 °C (range: 7.4 to 15.3 °C), with dissolved oxygen averaging 95.8% saturation (range: 82.4-107.8%). Specific conductance and pH values obtained for each lake are graphed in Figures 9 and 10.

## Evaluation of Fish Concerns

Information from fish sampling and depth measurements was used to evaluate each lake regarding its potential to support fish. Obviously, if fish were captured during the gill net sampling, the lake was classified as fish-bearing. The gill net sets were short, however, so the absence of catch does not necessarily mean a lake does not support fish. Lakes also were assessed for their proximity to fish-bearing streams and their depth. Lakes deeper than 7 feet are likely to retain unfrozen water during winter, thus have the potential to overwinter fish. Deep lakes near fish-bearing streams are classified as potential fish-bearing lakes, with additional sampling needed if further clarification of the designation is desired. Results of the evaluation are summarized in Table 5.

Included in Table 5 is an evaluation of 23 lakes provided by Nuiqsut elders. These evaluations were provided to ARCO Alaska during tours of the region in fall 1999. For 18 lakes, the evaluation reached in this study was the same as the elders evaluation. For three lakes considered potentially fish-bearing, the elders expressed no fish concern (L9822, M9904, and Y2.1). Two lakes that were classified as having no fish concern were identified by the elders as being potentially fish-bearing (M9914 and M9923). These two lakes are large, shallow tundra lakes remote from fish-bearing streams. The elders expressed the opinion that these large lakes tend to have pressure ridges form on them in the middle of winter due to cracks in the lake ice that are kept open by shifting currents and that this type of lake will have fish. They indicated that when this phenomenon is observed on any lake of this size, caution should be exercised to avoid affecting potential fish present.

Based on the above lake evaluation, 19 lakes were confirmed to contain fish, another 12 have potential to be fish-bearing (based on this report and information from Nuiqsut elders), and 22 likely do not represent fish habitat (Figure 11).

After evaluation of identified or potential fish habitat, the following volumes of water were estimated to be available from the lakes in eastern NPR-A evaluated during 1999:

Region	Million Gallons
Nechelik	1.9
Nanuk	16.4
Clover	970.5
Lookout	303.8
Moose's Tooth	745.7
Rendezvous	513.4

The volume available from each lake is graphed in Figure 12.

## **LITERATURE CITED**

McElderry, H.I. and P.C. Craig. 1981. A fish survey in the lower Colville River drainage with an analysis of spawning use by Arctic and least cisco. Appendix 2. Final Report, Simpson Lagoon (Part 4, Fish). In: Environmental Assessment of the Alaskan Continental Shelf, Final Reports (Vol. 7). BLM/NOAA OCSEAP, Boulder, Colorado. p. 657-678.

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Netsch, N., E. Crateau, G. Love and N. Swanton. 1977. Freshwater fisheries reconnaissance of the coastal plain of National Petroleum Reserve-Alaska (NPR-A), July and August 1977. Preliminary report. USDI: US Fish and Wildlife Service. Anchorage, AK. 214p.

Table 1. Locations of lakes sampled during 1999 NPR-A fish survey.

Region	Lake	Latitude deg. min.	Longitude deg. min.	USGS Topo Sheet	Township/Range	Habitat
Nanuk	W2.1	70 17.73	151 6.28	Harrison Bay B-2	T11N R4E Sect. 22	Perched Lake (Frequent Flooding)
	W3.1	70 17.35	151 4.05	Harrison Bay B-2	T11N R4E Sect. 23	Perched Lake (Frequent Flooding)
	X4.1	70 16.49	151 3.22	Harrison Bay B-2	T11N R4E Sect. 26	Perched Lake (Frequent Flooding)
	X4.2	70 16.84	151 1.72	Harrison Bay B-2	T11N R4E Sect. 25	Perched Lake (Frequent Flooding)
Nechelik	T3.2	70 20.05	151 5.50	Harrison Bay B-2	T11N R4E Sect. 3	Perched Lake (Frequent Flooding)
	T3.3	70 20.22	151 5.81	Harrison Bay B-2	T11N R4E Sect. 3	Perched Lake (Frequent Flooding)
Clover	X1.1	70 16.05	151 11.60	Harrison Bay B-2	T11N R4E Sect. 31/32	Tundra Lake
	X1.2	70 16.00	151 9.80	Harrison Bay B-2	T11N R4E Sect. 32	Tundra Lake
	X2.1	70 16.25	151 8.00	Harrison Bay B-2	T11N R4E Sect. 28	Tundra Lake
	X3.1	70 16.43	151 5.57	Harrison Bay B-2	T11N R4E Sect. 27	Drainage Lake
	Y2.1	70 15.70	151 6.80	Harrison Bay B-2	T11N R4E Sect. 34	Tundra Lake
	L9817	70 15.08	151 17.95	Harrison Bay A-3	T10N R3E Sect. 10	Tundra Lake
	L9818	70 13.91	151 21.95	Harrison Bay A-3	T10N R3E Sect. 10	Tundra Lake
	L9819	70 16.18	151 21.16	Harrison Bay B-3	T10N R3E Sect. 34	Oxbow Lake (off Ubluthoch River)
	L9822	70 15.15	151 17.47	Harrison Bay B-3	T10N R3E Sect. 3	Tundra Lake
	L9823	70 15.08	151 17.95	Harrison Bay B-3	T10N R3E Sect. 3	Tundra Lake
	L9824	70 17.04	151 16.04	Harrison Bay B-3	T11N R3E Sect. 25	Perched Lake (Frequent Flooding)
	L9825	70 17.29	151 16.28	Harrison Bay B-3	T11N R3E Sect. 24	Perched Lake (Frequent Flooding)
	L9832	70 15.30	151 21.66	Harrison Bay B-3	T10N R3E Sect. 3	Tundra Lake
Lookout	L9914	70 18.93	151 27.90	Harrison Bay B-3	T11N R3E Sect. 7	Perched Lake (Infrequent Flooding?)
	L9915	70 18.65	151 29.53	Harrison Bay B-3	T11N R3E Sect. 18	Perched Lake (Frequent Flooding?)
	M9912	70 15.13	151 33.38	Harrison Bay B-3	T10N R2E Sect. 2	Tundra Lake
	M9913	70 15.10	151 32.40	Harrison Bay B-3	T10N R2E Sect. 2	Tundra Lake
	M9914	70 14.00	151 37.84	Harrison Bay A-3	T10N R2E Sect. 9	Tundra Lake
	M9922	70 13.80	151 35.24	Harrison Bay A-3	T10N R2E Sect. 10-11, 14-15	Tundra Lake
	M9923	70 13.70	151 31.35	Harrison Bay A-3	T10N R2E Sect. 12-13	Tundra Lake
	M9924	70 15.91	151 30.75	Harrison Bay B-3	T11N R2E Sect. 36	Tundra Lake
	M9925	70 14.85	151 28.70	Harrison Bay B-3	T10N R3E Sect. 6	Tundra Lake

Table 1. Locations of lakes sampled during 1999 NPR-A fish survey.

Region	Lake	Latitude deg. min.	Longitude deg. min.	USGS Topo Sheet	Township/Range	Habitat
Lookout	M9930	70 18.53	151 29.25	Harrison Bay B-3	T11N R3E Sect. 18	Tundra Lake
	MC7917	70 17.40	151 31.47	Harrison Bay B-3	T11N R2E Sect. 24	Drainage Lake
Moose's Tooth	M9901	70 13.58	151 48.83	Harrison Bay A-4	T10N R1E Sect. 11-14	Oxbow Lake (off Judy Creek)
	M9902	70 13.83	151 48.03	Harrison Bay A-3	T10N R1E Sect. 12	Tundra Lake
	M9903	70 14.40	151 45.26	Harrison Bay A-3	T10N R1E Sect. 12	Oxbow Lake? (off Judy Creek)
	M9904	70 14.64	151 46.00	Harrison Bay A-3	T10N R1E Sect. 1	Perched-Frequent Flooding? (Judy Creek)
	M9905	70 14.74	151 44.93	Harrison Bay A-3	T10N R2E Sect. 6	Tundra Lake?
	M9906	70 14.24	151 51.40	Harrison Bay A-4	T10N R1E Sect. 10	Tundra Lake
	M9907	70 14.47	151 52.65	Harrison Bay A-4	T10N R1E Sect. 10-11	Tundra Lake
	M9908	70 16.42	151 38.73	Harrison Bay B-3	T11N R2E Sect. 28	Perched-Frequent Flooding? (Fish Creek)
	M9909	70 15.80	151 39.67	Harrison Bay B-3	T11N R2E Sect. 33	Oxbow Lake (Fish Creek)
	M9910	70 15.23	151 42.95	Harrison Bay B-3	T10N R2E Sect. 6	Perched-Frequent Flooding? (Fish Creek)
	M9911	70 15.65	151 40.30	Harrison Bay B-3	T11N R2E Sect. 33	Perched-Infrequent Flooding? (Fish Creek)
	M9918	70 13.27	151 46.26	Harrison Bay A-3	T10N R1E Sect. 13	Oxbow Lake (off Judy Creek)
	M9919	70 13.50	151 54.50	Harrison Bay A-3	T10N R1E Sect. 9-16	Oxbow Lake (off Judy Creek)
	M9920	70 13.40	151 51.00	Harrison Bay A-3	T10N R1E Sect. 15	Oxbow Lake (off Judy Creek)
	M9921	70 15.90	151 38.27	Harrison Bay B-3	T11N R2E Sect. 33	Tundra Lake
	M9926	70 15.38	151 47.33	Harrison Bay B-3	T10N R1E Sect. 1	Oxbow Lake (off Fish Creek)
	M9927	70 15.56	151 47.80	Harrison Bay B-3	T11N R1E Sect. 35	Perched Lake (?)
	M9928	70 16.06	151 46.30	Harrison Bay B-3	T11N R1E Sect. 36	Oxbow Lake (off Fish Creek)
Rendezvous	L9911	70 10.25	151 47.35	Harrison Bay B-3	T9N and T10N R1E Sect. 1/36	Tundra Lake
	M9915	70 12.20	151 45.60	Harrison Bay A-3	T10N R1E Sect. 24	Tundra Lake
	M9916	70 11.82	151 44.65	Harrison Bay A-3	T10N R2E Sect. 30	Tundra Lake
	M9917	70 11.18	151 49.52	Harrison Bay A-3	T10N R1E Sect. 26	Tundra Lake

Table 2. Total catch and catch rate by species in the eastern NPR-A regions surveyed in 1999.

Number Caught by Area

Area	Number of Lakes	Lakes with Fish	Fish Caught		
			Broad Whitefish	Least Cisco	Arctic Grayling
Nanuk	2	2	6	15	
Nechelik	4	4	5	3	
Clover	13	2		1	14
Lookout	11	2		13	
Moose's Tooth	18	6	19	23	34
Rendezvous	4	1			3
Total:	52	17	30	55	51

Catch per 24 hours of Netting

Area	Sampling (hours)	Catch Rate			
		Effort	Broad Whitefish	Least Cisco	Arctic Grayling
Nanuk	10.3	14.0	35.0	0.0	
Nechelik	9.7	12.3	7.4	0.0	
Clover	77.9	0.0	0.3	4.3	
Lookout	51.0	0.0	6.1	0.0	
Moose's Tooth	93.2	4.9	5.9	8.8	
Rendezvous	24.5	0.0	0.0	2.9	

Table 3. Fish caught by gill net sampling during 1999 in eastern NPR-A.

Region	Lake	Date	Duration (hours)	Broad Whitefish	Least Cisco	Arctic Grayling	Total Catch
Nechelik	T3.2	Jul 30 99	5.92	4	2		6
	T3.3	Jul 30 99	3.80	1	1		2
Nanuk	W2.1	Aug 3 99	6.72	2	3		5
	W3.1	Jul 22 99	1.37	1	1		2
	X4.1	Jul 23 99	0.58	1	4		5
	X4.2	Jul 23 99	1.62	2	7		9
Clover	L9817	Jul 17 99	7.48				0
	L9818	Jul 17 99	7.12				0
	L9819	Jul 19 99	7.17				0
	L9822	Jul 16 99	6.53				0
	L9823	Jul 16 99	6.27				0
	L9824	Jul 18 99	6.65				0
	L9825	Jul 18 99	6.77		1	13	14
	L9832	Jul 19 99	3.17				0
	X1.1	Jul 19 99	6.23				0
	X1.2	Jul 19 99	6.10				0
	X2.1	Jul 31 99	7.67				0
	X3.1	Aug 4 99	1.75		1	1	1
	Y2.1	Jul 31 99	5.00				0
Lookout	L9914	Aug 4 99	2.58				0
	L9915	Jul 27 99	5.67		3		3
	M9912	Jul 12 99	6.30				0
	M9913	Jul 12 99	5.40				0
	M9914	Jul 12 99	2.33				0
	M9922	Jul 15 99	6.43				0
	M9923	Jul 17 99	4.00				0
	M9924	Jul 18 99	2.18				0
	M9925	Jul 18 99	6.42				0
	M9930	Jul 27 99	5.70				0
	MC7917	Aug 4 99	3.97		10		10
Moose's Tooth	M9901	Jul 9 99	6.83		29	29	
	M9902	Jul 9 99	5.88				0
	M9903	Jul 10 99	3.15				0
	M9903	Jul 16 99	6.75				0
	M9904	Jul 10 99	3.42				0
	M9905	Jul 10 99	3.92				0
	M9906	Jul 15 99	7.57				0
	M9907	Jul 15 99	8.22				0
	M9908	Jul 11 99	4.87				0
	M9909	Jul 11 99	4.95	2	6		8
	M9910	Jul 11 99	1.17			4	4
	M9911	Jul 17 99	6.25	14	2		16
	M9918	Jul 14 99	6.32		1	1	2
	M9919	Jul 14 99	4.88		1		1
	M9920	Jul 14 99	2.83				0
	M9921	Jul 15 99	4.27				0
	M9926	Jul 20 99	5.15				0
	M9927	Jul 20 99	5.20				0
	M9928	Jul 20 99	1.63	3	13		16
Rendezvous	L9911	Jul 25 99	4.08				0
	M9915	Jul 13 99	5.47				0
	M9916	Jul 13 99	6.27				0
	M9917	Jul 13 99	8.70		3		3

Table 4. Water quality parameters measured at lakes in eastern NPR-A during 1999.

Region	Lake	Date	Water Temp (deg C)	Dissolved Oxygen (mg/l)	Specific % sat.	Conductance (mS/cm)	Salinity (ppt)	pH	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	TDS (mg/l)	
Nechelik	T3.2	7/30/99	8.3	11.25	93.9	389.8	7.53	87.0	54.3	12.3	8.1	60.2	194.0	
	T3.3	7/30/99	8.1	11.23	98.2	328.1	7.78	57.8	41.3	11.8	7.5	58.6	160.0	
Nanuk	W2.1	8/3/99	12.6	11.25	105.3	144.6	7.97	22.1	13.7	8.6	4.0	38.0	70.0	
	W2.1	1993							25.0	13.0	6.0	2.3	24.0	110.0
W3.1	W2.1	1998							21.1	9.5	7.3	3.1	31.1	68.0
	W3.1	7/22/99	9.0	11.31	97.8	167.2	7.88	15.0	6.8	7.5	2.8	30.0	67.0	
X4.1	W3.1	7/23/99	10.1	11.23	99.8	170.8	7.95	20.7	11.7	12.4	6.5	57.6	88.0	
	X4.1	7/23/99	9.2	11.04	96.2	311.5	8.16	49.1	22.5	19.8	12.6	101.0	154.0	
Clover	L9817	7/17/99	14.9	9.23	92.6	325.2	7.98							
	L9818	7/17/99	13.8	9.10	87.9	256.4	7.92							
L9819	L9819	7/19/99	12.3	9.11	85.3	176.9	8.00							
	L9822	7/16/99	15.1	9.77	96.6	107.9	7.89	12.1	2.6	8.6	2.2	30.6	44.0	
L9823	L9823	7/16/99	15.1	9.57	94.9	214.5	7.76	44.4	8.9	22.4	6.5	82.6	168.0	
	L9824	7/18/99	13.5	9.14	88.1	55.7	7.84	5.3	1.7	5.2	1.4	19.0	MDL=35	
L9825	L9825	7/18/99	12.6	9.01	82.4	46.8	7.86	4.5	1.4	4.4	1.2	15.9	MDL=35	
	L9832	7/19/99	10.9	10.27	93.0	203.4	7.98							
X1.1	X1.1	7/19/99	11.1	10.05	91.7	172.2	8.18							
	X1.2	7/19/99	10.7	9.83	89.3	179.6	8.13							
X2.1	X2.1	7/31/99	9.0	11.27	97.8	229.5	8.03							
	X3.1	8/4/99	12.9	11.33	107.7	153.0	8.20							
Y2.1	Y2.1	7/31/99	9.0	11.36	98.4	160.7	7.93	12.9	4.4	20.1	3.7	65.5	96.0	
	Lookout													
L9914	L9914	8/4/99	12.5	11.28	107.8	405.9	8.42							
	L9915	7/27/99	7.4	11.50	95.3	190.9	8.29	20.8	9.5	25.4	3.7	78.9	124.0	
M9912	M9912	7/12/99	14.3	9.94	95.7	88.2	7.38	13.9	4.4	8.6	2.2	31.4	59.0	
	M9913	7/12/99	13.9	9.82	97.0	85.9	7.37	11.9	3.9	9.2	2.1	32.0	55.0	
M9914	M9914	7/12/99	14.2	9.84	95.8	99.3	7.45	12.1	4.5	10.1	2.4	35.9	74.0	
	M9922	7/15/99	14.3	10.00	95.4	136.4	7.77	23.8	6.2	16.5	4.1	58.0	92.0	
M9923	M9923	7/17/99	14.4	9.71	95.8	253.2	8.23	24.1	6.8	38.4	6.3	122.0	140.0	
	M9924	7/18/99	11.7			186.1	7.58	22.7	10.5	24.8	4.4	77.3	136.0	
M9925	M9925	7/18/99	12.2			275.5	8.12	37.8	11.1	40.2	6.2	122.0	194.0	

Table 4. Water quality parameters measured at lakes in eastern NPR-A during 1999.

Region	Lake	Date	Water Temp (deg C)	Dissolved Oxygen (mg/l)	Specific Conductance (% sat.) (mS/cm)	Salinity (ppt)	pH	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Hardness (mg/l)	TDS (mg/l)
Lookout	M9930	7/27/99	7.9	11.98	102.3	178.5	8.26	17.8	7.3	25.2	3.6	77.8	88.0
	MC7917	8/4/99	11.9	10.50	97.2	175.2	8.02	14.2	5.8	25.4	3.3	76.7	104.0
Moose's Tooth	M9901	7/9/99	14.7	9.91	97.9	179.6	7.66	23.8	4.6	24.7	3.7	79.8	110.0
	M9902	7/9/99	14.9	9.57	95.0	293.7	8.10	18.5	8.6	39.3	7.8	135.0	164.0
	M9903	7/10/99	15.2	9.55	95.2	87.3	8.11	7.9	2.8	9.7	1.9	33.2	55.0
	M9903	7/16/99	15.3	9.98	100.0	85.4	7.86						
	M9904	7/10/99	14.8	9.62	95.3	209.8	8.04	8.3	3.4	32.0	4.4	98.6	126.0
	M9905	7/10/99	15.0	9.41	93.6	85.2	7.97	7.4	2.6	9.9	1.9	33.0	61.0
	M9906	7/15/99	13.0	9.90	94.6	199.7	8.25	13.8	5.0	26.9	4.0	85.6	112.0
	M9907	7/15/99	13.2	9.88	95.5	199.3	8.30	13.3	5.4	25.4	4.3	84.0	116.0
	M9908	7/11/99	14.2	9.90	96.3	317.8	8.35	28.6	9.0	40.9	7.6	136.0	188.0
	M9909	7/11/99	13.7	9.92	95.0	173.3	8.11	20.5	5.0	18.8	3.8	65.1	98.0
	M9910	7/11/99	13.7	10.50	101.1	126.6	8.10	8.7	3.1	17.2	3.0	54.9	78.0
	M9911	7/11/99	14.3	10.26	100.6	146.0	8.03	9.4	3.6	21.5	2.9	65.7	84.0
	M9918	7/14/99	14.5	9.68	94.9	75.1	8.04	7.0	2.8	8.5	1.8	29.8	44.0
	M9919	7/14/99	14.3	10.11	98.8	106.2	7.80	10.4	3.7	12.8	2.5	43.2	138.0
	M9920	7/14/99	15.3	9.84	98.3	174.4	8.27	7.7	3.4	25.5	4.0	81.6	114.0
	M9921	7/15/99	13.9	10.38	103.0	196.7	8.02	27.4	8.6	28.3	5.1	91.6	130.0
	M9926	7/20/99	12.3	9.67	90.5	166.9	8.37	9.0	4.5	23.8	5.0	132.0	84.0
	M9927	7/20/99	9.6	10.19	82.8	237.1	8.60	19.8	9.7	29.0	8.8	102.0	136.0
	M9928	7/20/99	12.0	9.90	92.0	121.0	8.04	8.4	4.0	16.4	2.7	52.2	62.0
Rendezvous	L9911	7/25/99	9.2	11.04	95.9	178.9	8.22	11.9	5.0	27.5	3.8	84.2	118.0
	M9915	7/13/99	14.7	9.76	95.7	88.7	7.58	14.1	4.1	9.0	2.3	32.8	61.0
	M9916	7/13/99	13.5	10.15	97.3	146.5	9.00	17.5	8.0	15.4	3.8	55.0	120.0
	M9917	7/13/99	14.6	9.72	95.5	208.1	8.26	19.3	6.4	27.7	4.3	88.6	138.0

Table 5. Summary of available water and fish presence in lakes sampled in eastern NPR-A during 1999.

Region	Lake Number	GPS Est Acreage	Maximum Depth (ft)	Calculated Volume (mil gals)	15% Vol.			Elders <sup>3</sup> Fish Concern
					>7 ft (mil gals)	Fish Caught <sup>1</sup>	Fish Concern <sup>2</sup>	
<b>Nanuk</b>								
	W2.1	64.0	10.2	70.2	3.3 BDWF,LSCS	Yes		
	W3.1	30.0	19.3	62.3	6.0 BDWF,LSCS	Yes		
	X4.1	15.7	16.6	28.1	2.4 BDWF,LSCS	Yes		
	X4.2	16.3	25.0	43.7	4.7 BDWF,LSCS	Yes		
<b>Nechelik</b>								
	T3.2	13.7	12.5	18.4	1.2 BDWF,LSCS	Yes		
	T3.3	11.6	10.5	13.1	0.7 BDWF,LSCS	Yes		
<b>Clover</b>								
	L9817	74.6	9.0	72.2	2.4 None	No	NO	
	L9818	32.7	4.0	14.1	None	No		
	L9819	244.5	7.9	207.7	3.5 None	No		
	L9822	11.6	11.0	13.8	0.8 None	Y?	NO	
	L9823	5.0	12.0	6.4	0.4 None	No	NO	
	L9824	21.6	11.0	25.5	1.4 None	Y?		
	L9825	12.3	15.3	20.2	1.6 LSCS,GRAY	Yes		
	L9832	242.5	2.8	73.0	None	No		
	X1.1	221.9	6.0	143.1	None	No		
	X1.2	40.1	5.0	21.6	None	No		
	X2.1	650.0	6.1	426.3	None	No	NO	
	X3.1	5.0	14.2	7.7	0.6 GRAY	Yes		
	Y2.1	94.1	8.2	83.0	1.8 None	Y?	NO	
<b>Lookout</b>								
	L9914	24.4	16	42.0	3.5 None	Y?		
	L9915	24.4	14.4	37.7	2.9 LSCS	Yes		
	M9912	32.9	7.8	27.6	0.4 None	No	NO	
	M9913	20.0	7.9	17.0	0.3 None	No	NO	
	M9914	127.4	7.8	106.8	1.6 None	No	Poss. Least Cisco	
	M9922	190.7	5.3	108.6	None	No	NO	
	M9923	251.7	6.5	175.9	None	No	Probable Fish	
	M9924	47.9	3.4	17.5	None	No	NO	
	M9925	218.0	3.9	91.4	None	No		
	M9930	23.4	7.9	19.9	0.3 None	Y?		
	MC7916	418.6	8.0	360.1	6.8 BDWF,LSCS GRAY <sup>4</sup>	Yes		
	MC7917	293.8	12.6	398.0	26.5 LSCS	Yes		
<b>Moose's Tooth</b>								
	M9901	66.3	16.9	120.5	10.6 GRAY	Yes	Fish Present	
	M9902	19.9	11.3	24.1	1.4 None	No	NO	
	M9903	70.2	22.1	166.8	17.1 None	No	NO	
	M9904	25.2	9.3	25.2	0.9 None	Y?	NO	
	M9905	24.6	11.3	29.9	1.7 None	No	NO	
	M9906	202.9	9.7	211.6	8.8 None	No	NO	

Table 5. Summary of available water and fish presence in lakes sampled in eastern NPR-A during 1999.

Region	Lake Number	GPS Est Acreage	Maximum Depth	Calculated Volume (mil gals)	15% Vol. >7 ft (mil gals)		Fish Caught <sup>1</sup>	Fish Concern <sup>2</sup>	Elders <sup>3</sup> Fish Concern
			(ft)		Fish	Concern <sup>2</sup>			
<b>Moose's Tooth</b>									
	M9907	147.7	9.5	150.9	6.0	None	No	NO	
	M9908	17.9	9.4	18.1	0.7	None	Y?		
	M9909	117.6	16.4	207.3	17.8	BDWF,LSCS	Yes		
	M9910	146.5	9.0	141.8	4.7	GRAY	Yes	Fish Present	
	M9911	144.2	15.3	237.2	19.3	BDWF,LSCS	Yes		
	M9918	41.5	14.7	65.6	5.2	LSCS,GRAY	Yes	Fish Present	
	M9919	106.8	14.9	171.1	13.6	LSCS	Yes		
	M9920	96.1	18.0	185.9	17.0	None	Y?	Fish Present	
	M9921	108.3	4.4	51.3		None	No		
	M9926	31.6	8.1	27.5	0.6	None	Y?	Probable Fish	
	M9927	14.9	7.4	11.9	0.1	None	Y?		
	M9928	111.8	18.5	222.4	20.7	BDWF,LSCS	Yes		
<b>Rendezvous</b>									
	L9911	540.2	8.0	464.6	8.7	None	No		
	M9915	30.6	7.1	23.4	0.0	None	No	NO	
	M9916	42.8	3.8	17.5		None	No		
	M9917	175.1	9.8	184.5	7.9	GRAY	Yes		

<sup>1</sup> BWDF = broad whitefish, LSCS = least cisco, GRAY = arctic grayling

<sup>2</sup> Y? indicates that fish were not caught in 1999, but characteristics of the lake suggest fish may be present at times.

<sup>3</sup> Elders from Nuiqsut provided information on lake status during tours of the region in 1999.

<sup>4</sup> From McElderry and Craig (1981)



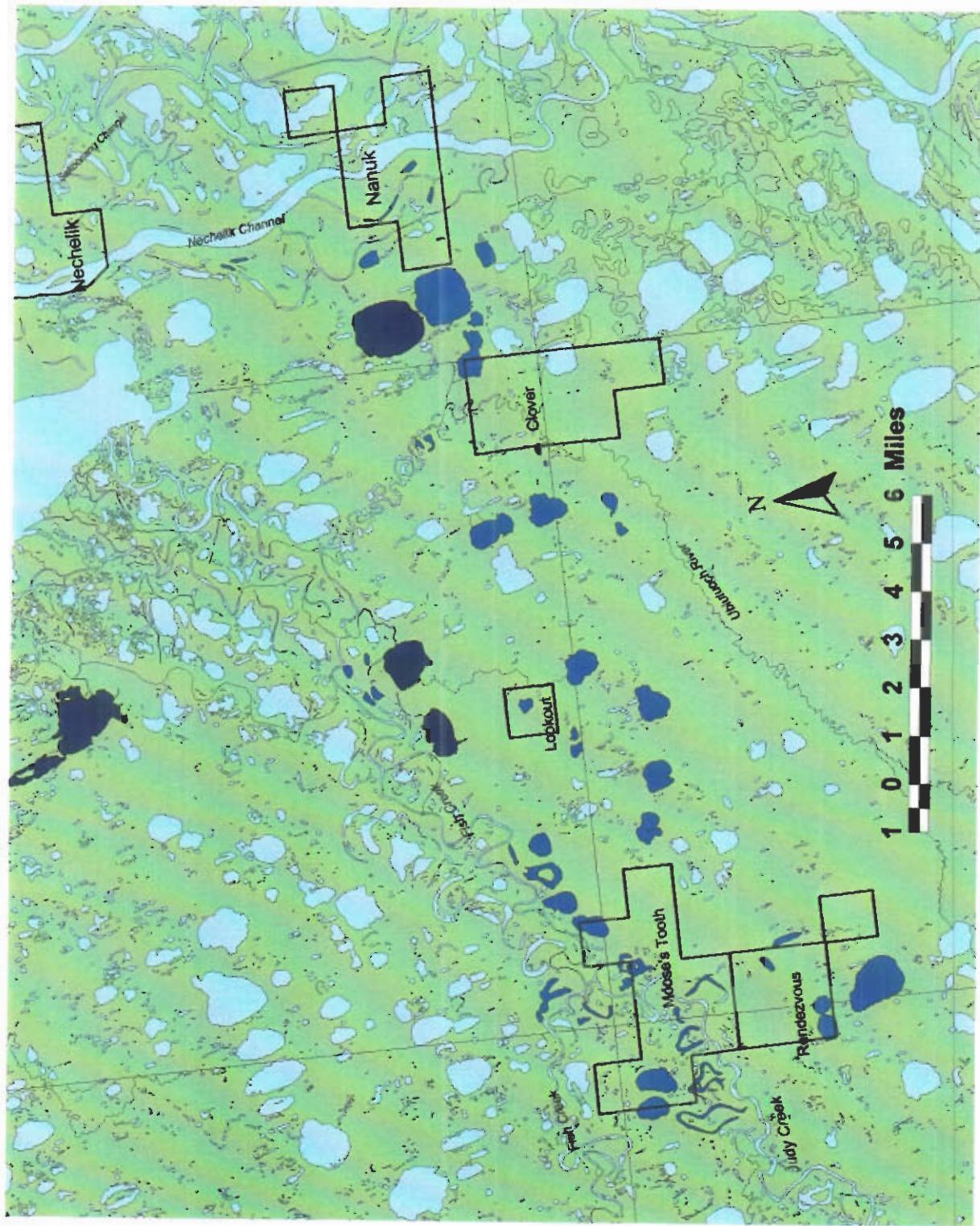


Figure 1. Exploration regions in eastern NPR-A surveyed for fish in 1999 (darker lakes are those sampled for fish in 1999, darkest were sampled in late 1970's).



Figure 2. Lakes sampled in or near the Moose's Tooth and Rendezvous exploration regions, 1999.

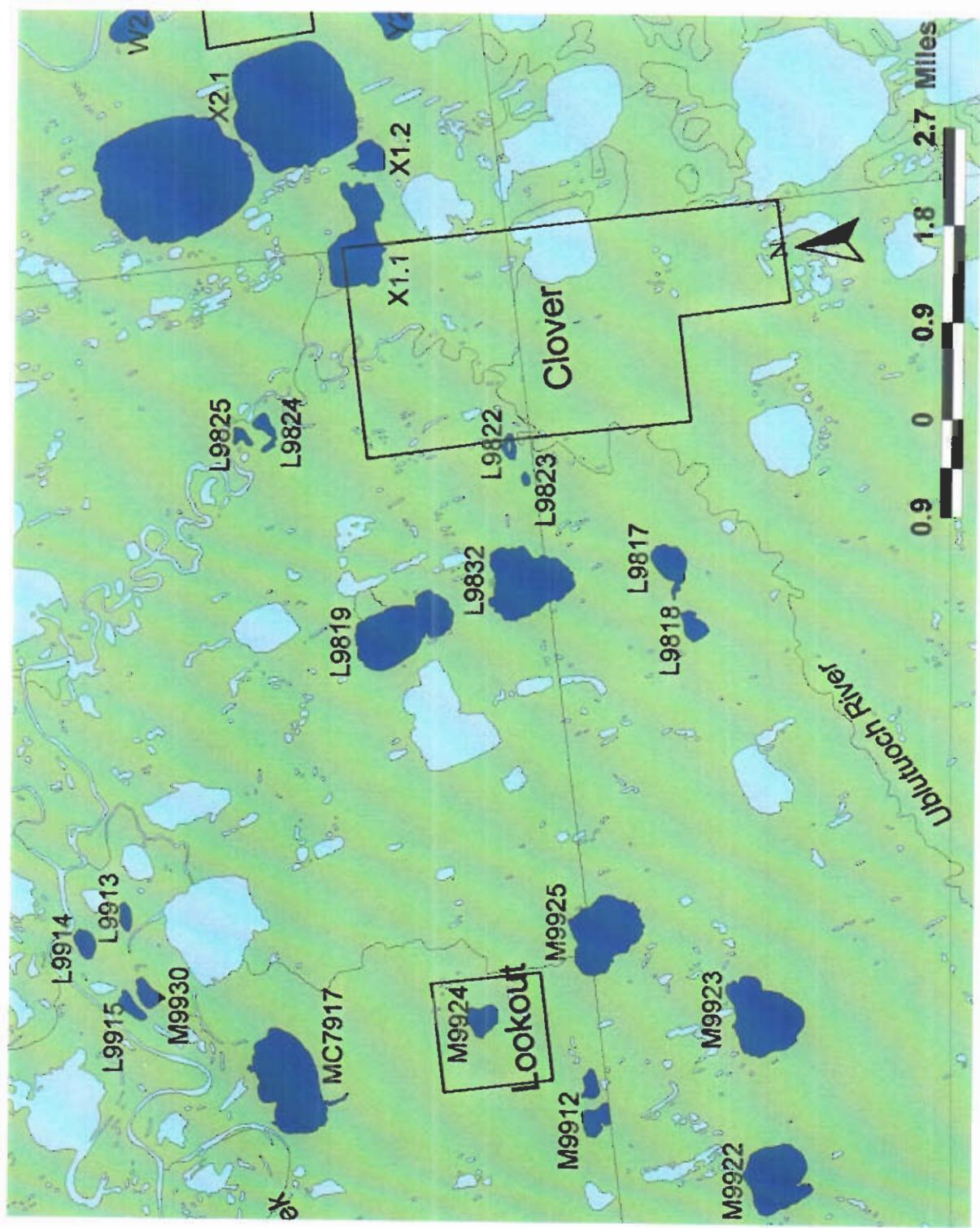


Figure 3. Lakes sampled in or near the Lookout and Clover exploration regions, 1999.

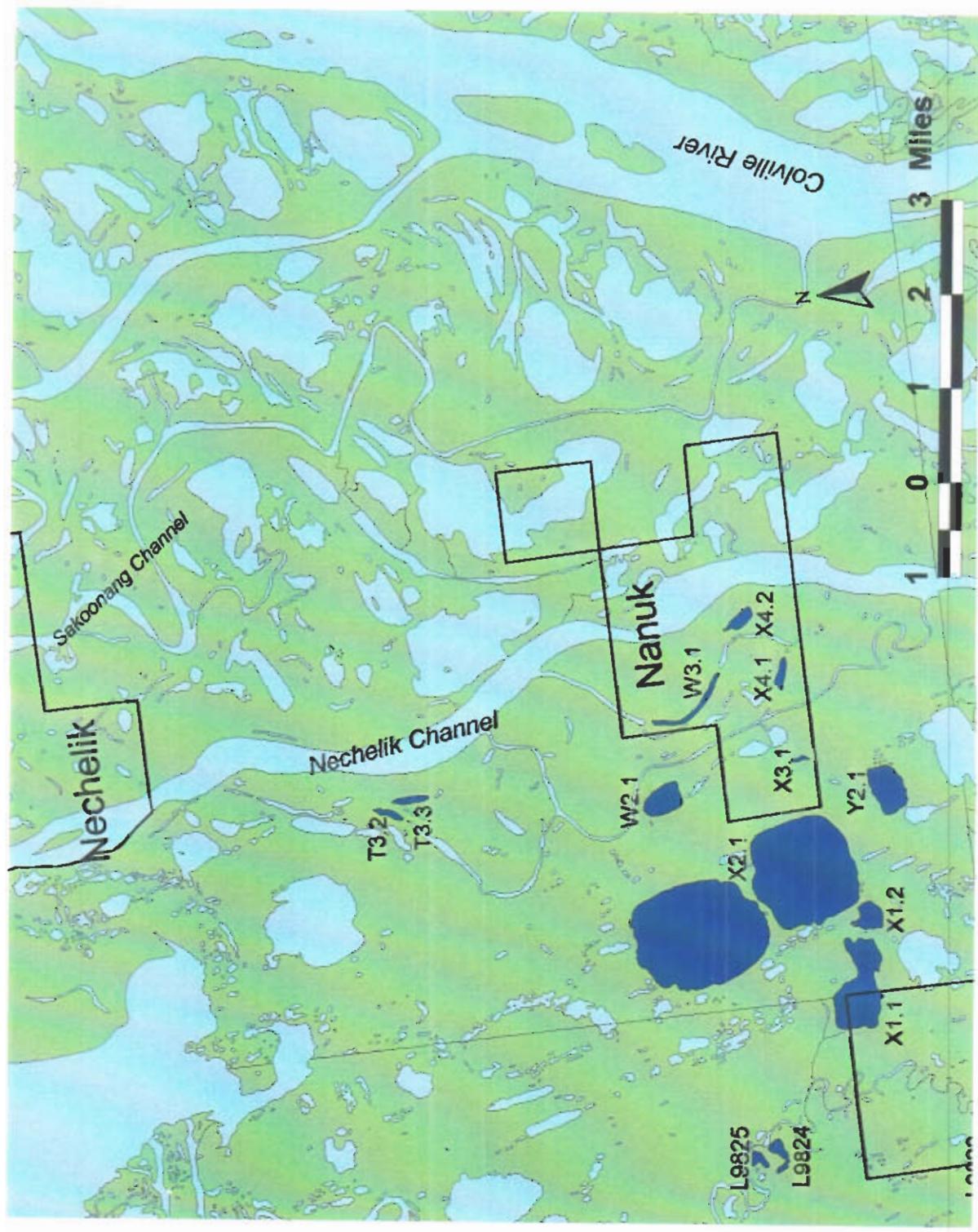


Figure 4. Lakes sampled in or near the NPR-A portions of the Nanuk and Nechelik exploration regions, 1999.

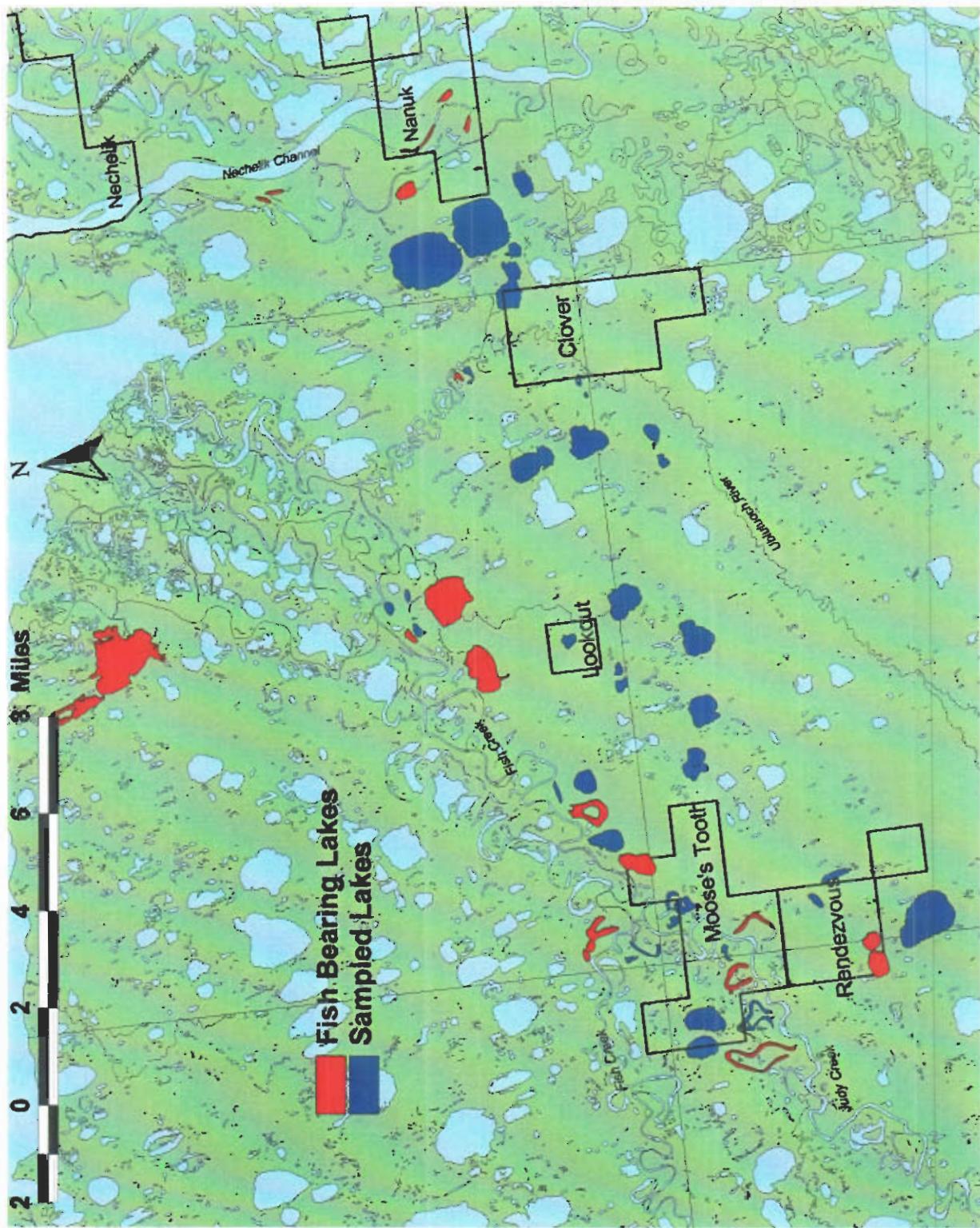


Figure 5. Fish distribution in eastern NPR-A lakes based on 1979-1999 sampling. (1977 data from Netsch et al. 1977, 1979 data from McElderry and Craig 1981)

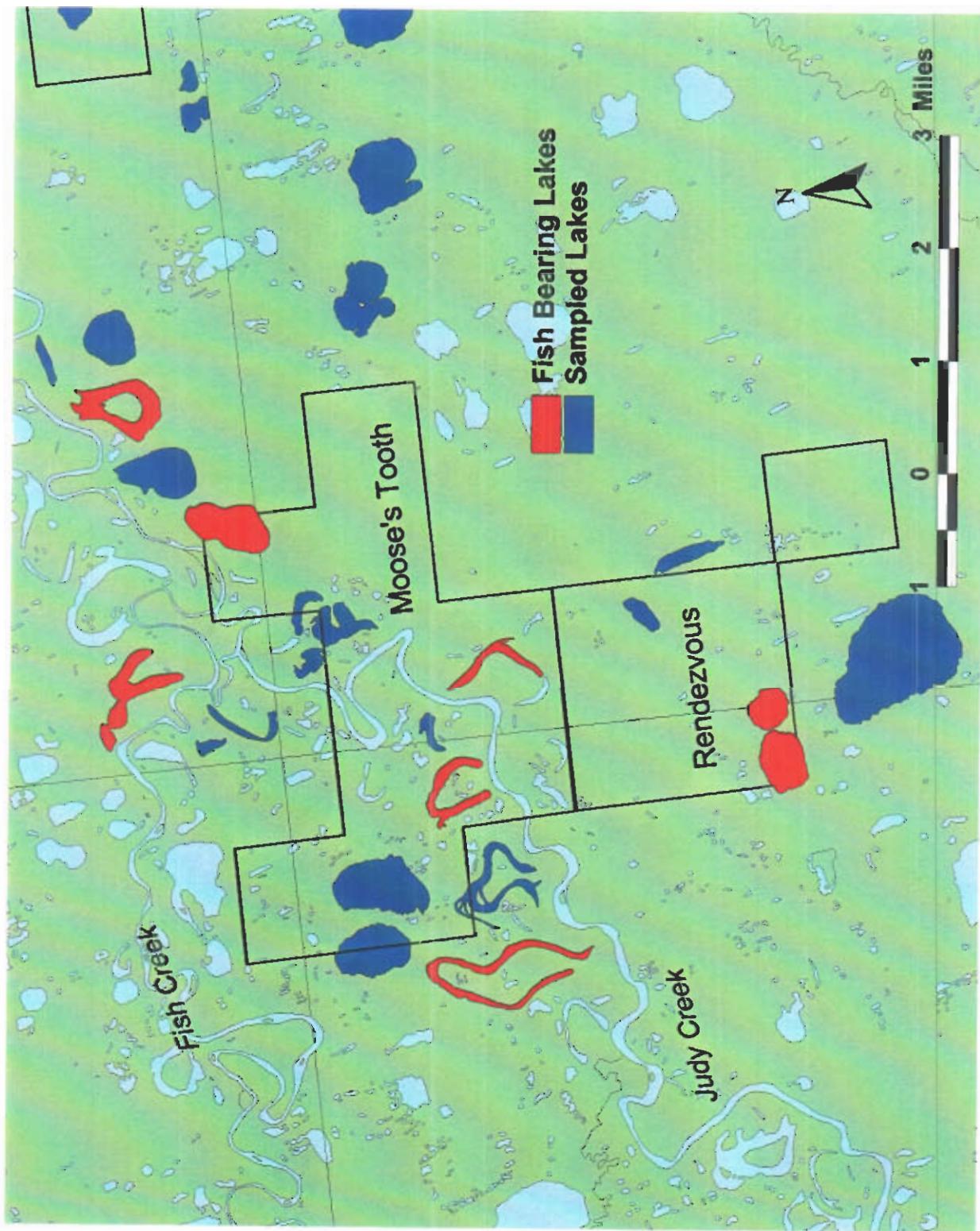


Figure 6. Fish-bearing lakes in or near the Moose's Tooth and Rendezvous exploration regions, 1999.

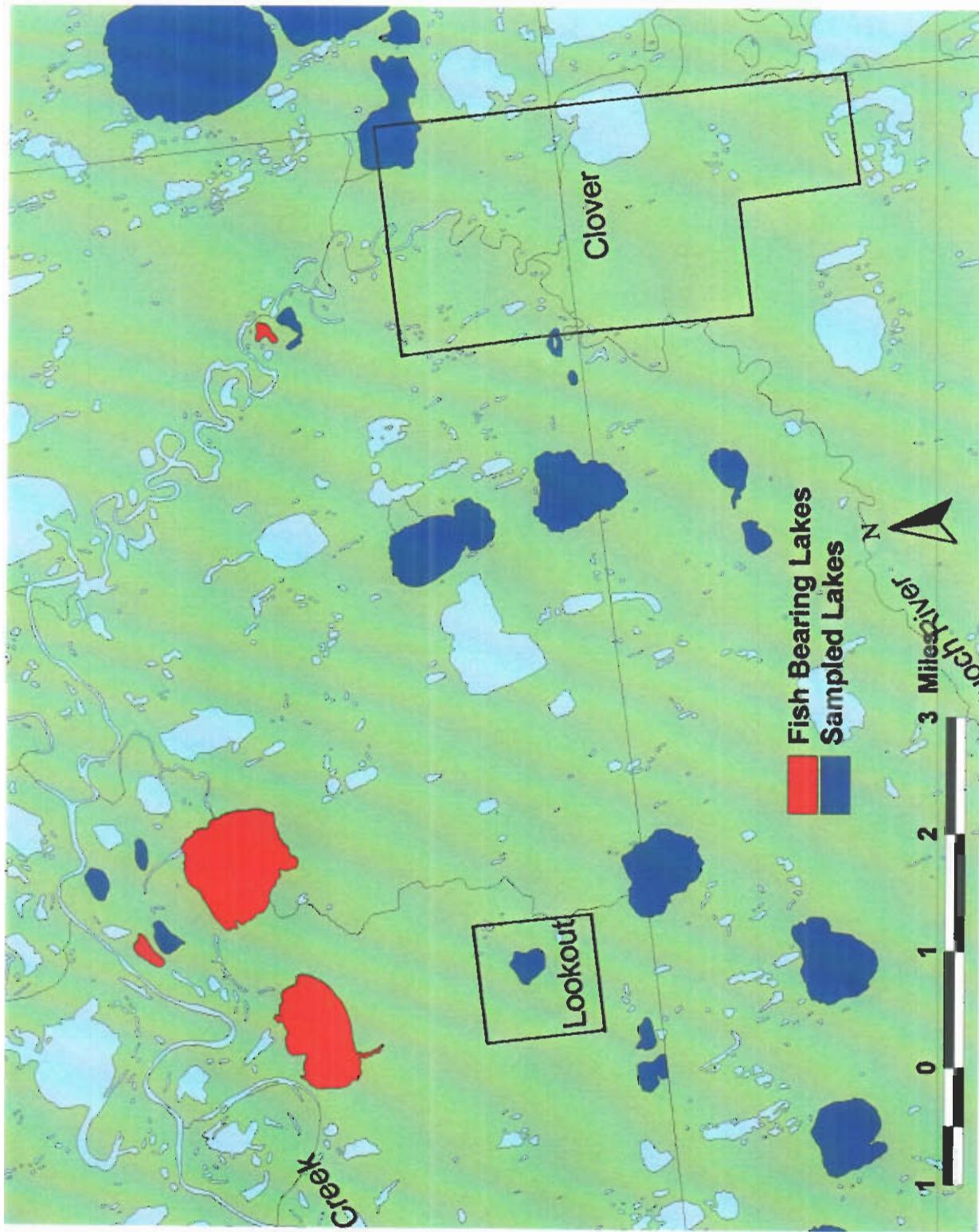


Figure 7. Fish-bearing lakes in or near the Lookout and Clover exploration regions, 1999.

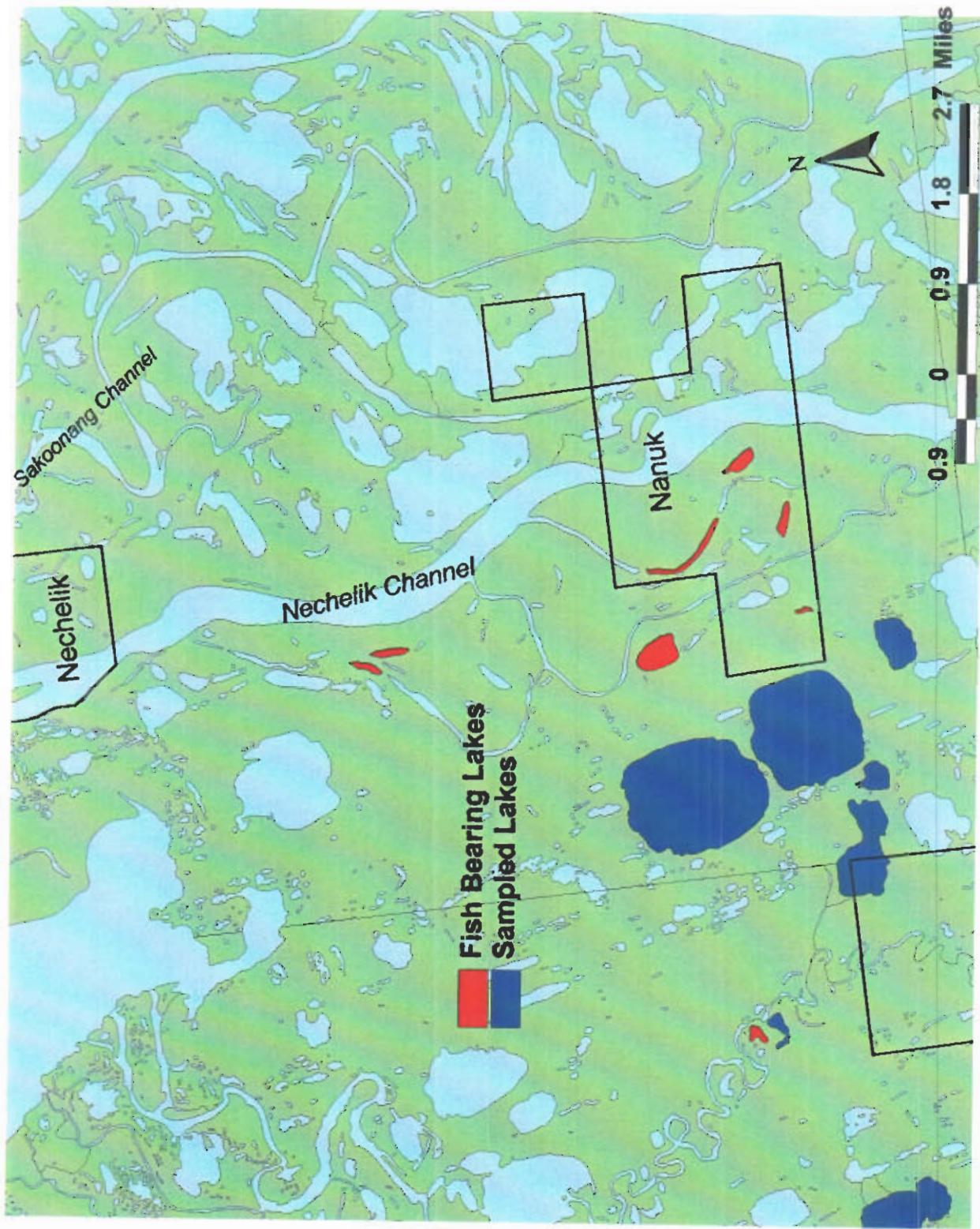


Figure 8. Fish-bearing lakes in or near the Namuk and Nechelik exploration regions, 1999.

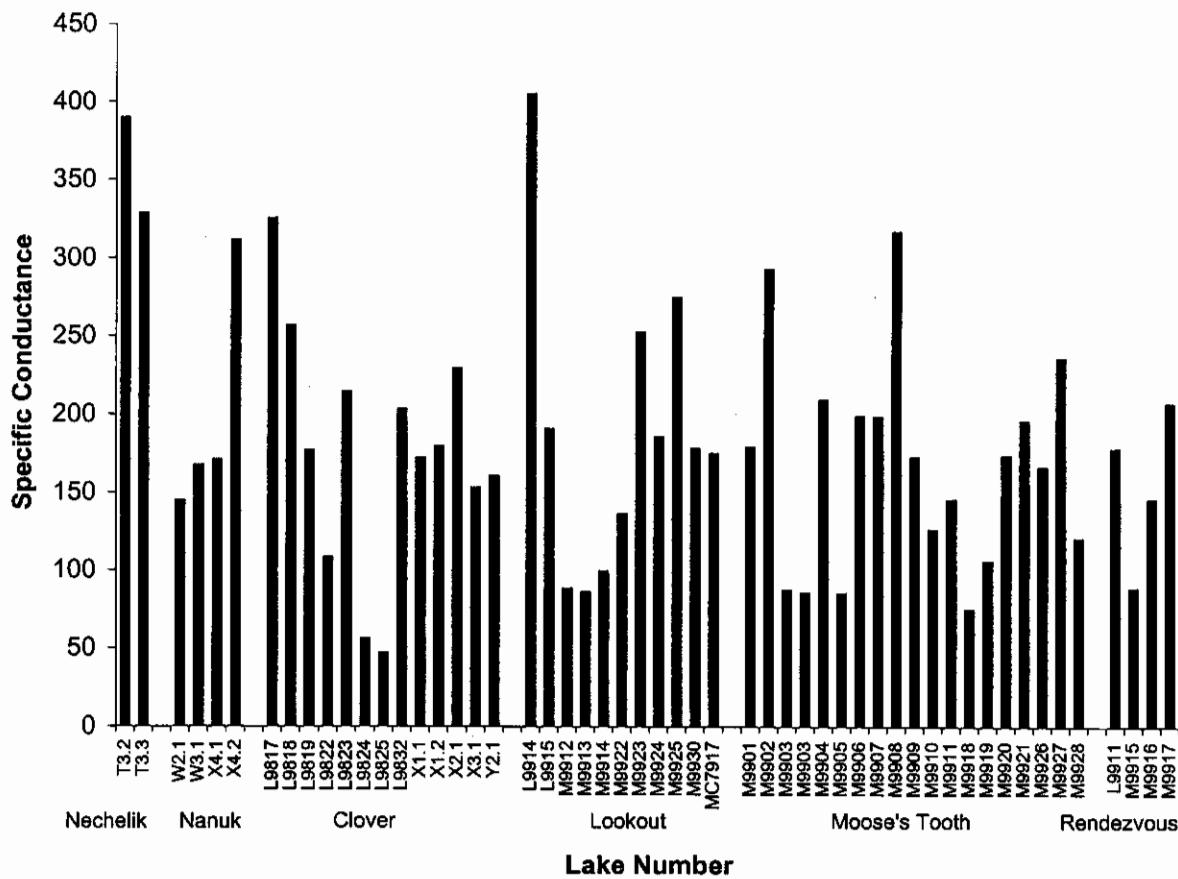


Figure 9. Specific conductance at eastern NPR-A lakes sampled for fish in 1999.

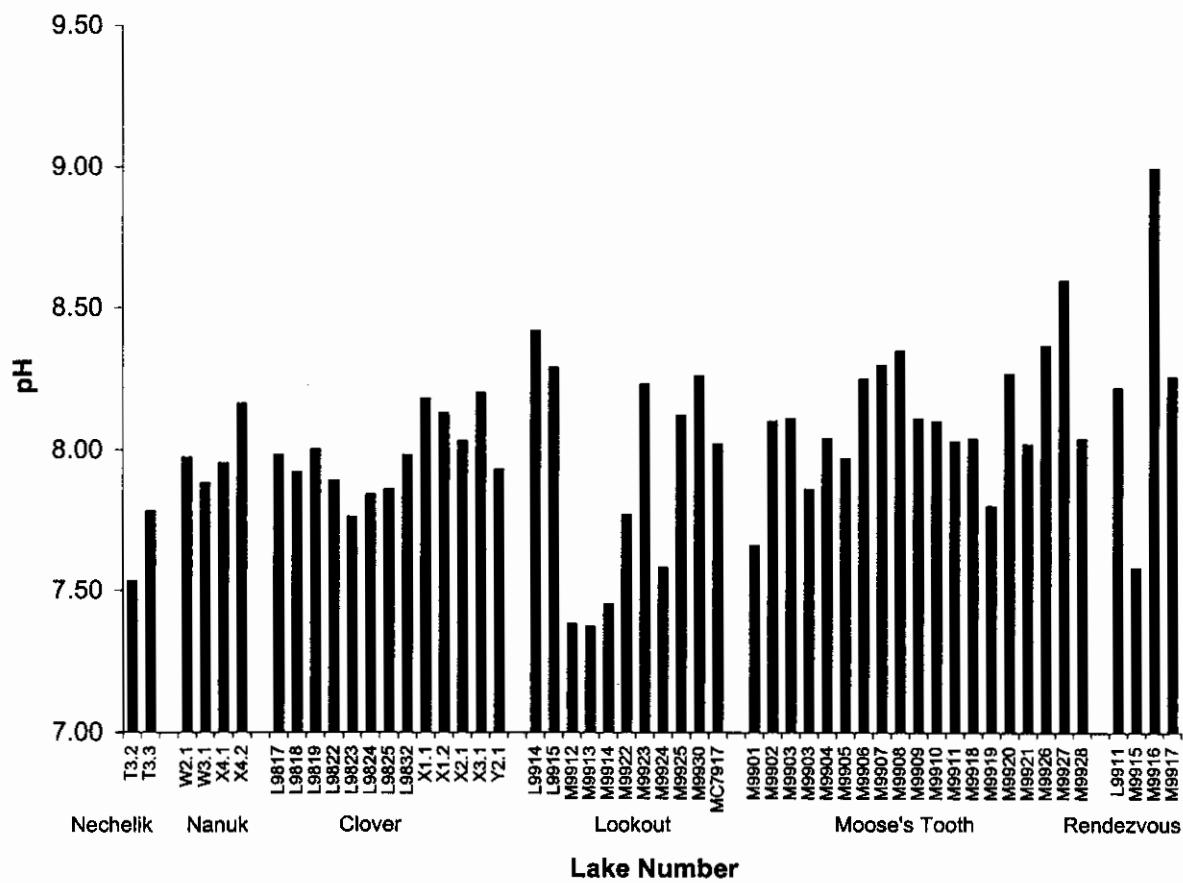


Figure 10. pH at eastern NPR-A lakes sampled for fish in 1999.

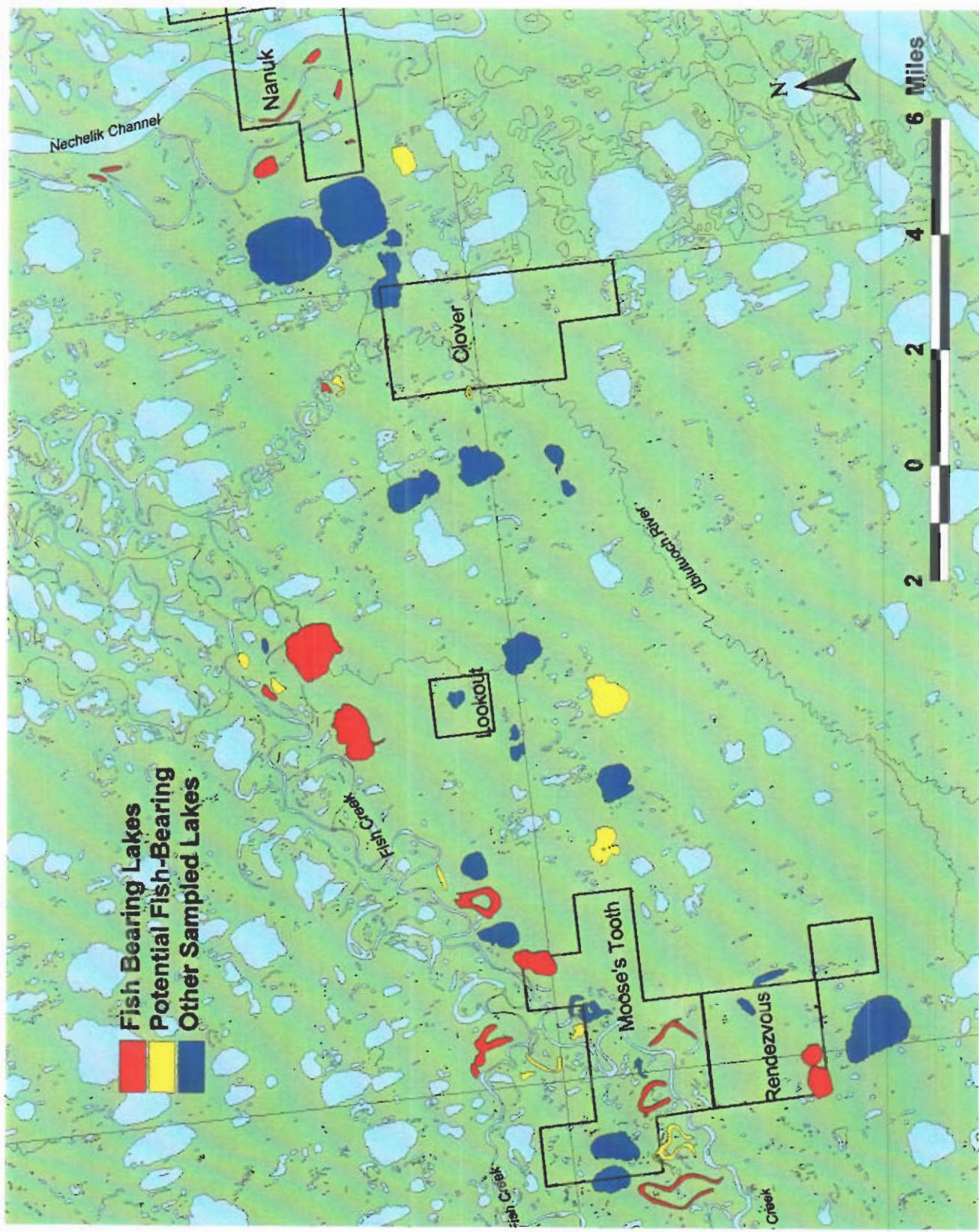


Figure 11. Confirmed or suspected fish-bearing lakes in eastern NPPR-A exploration regions, 1999.

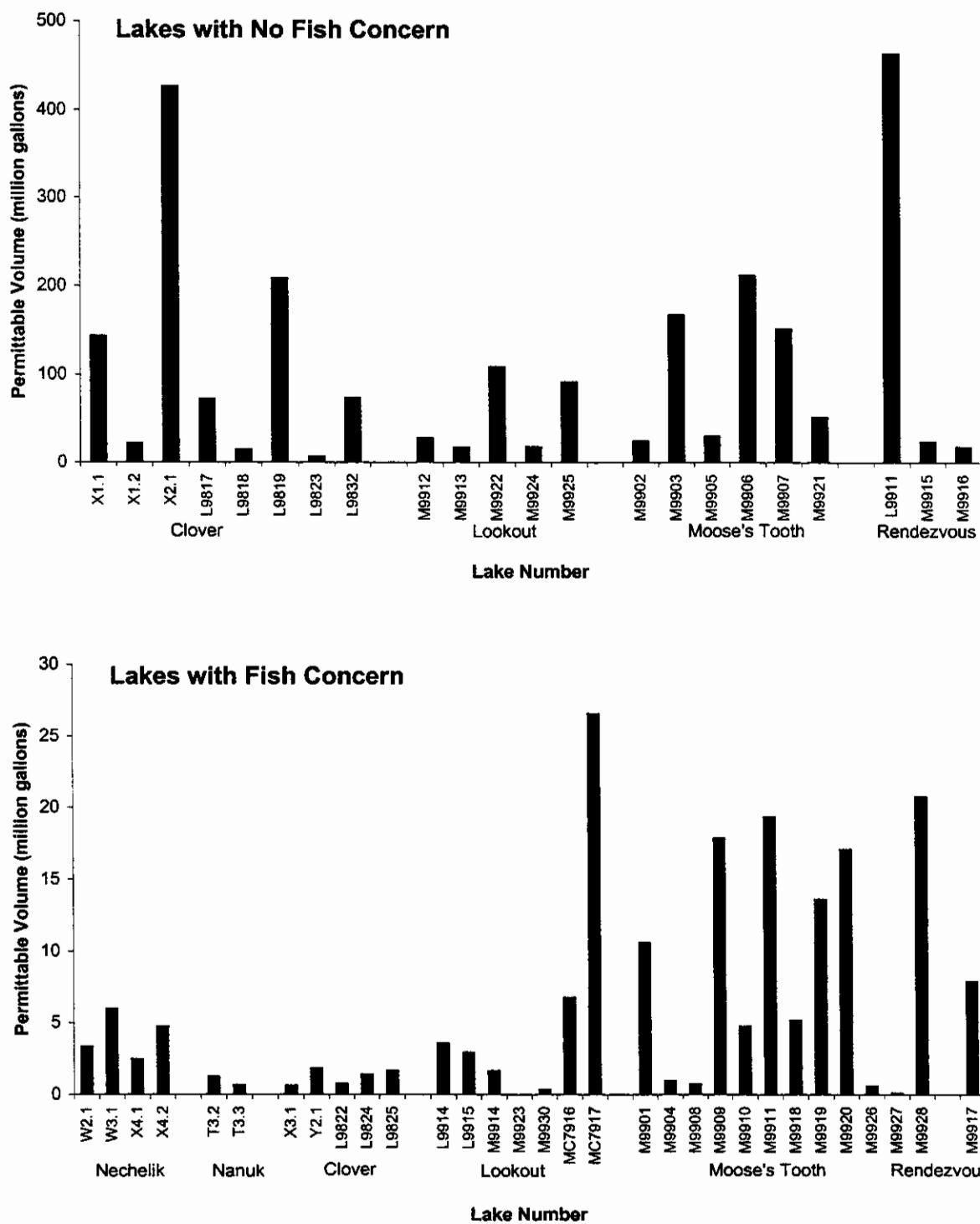
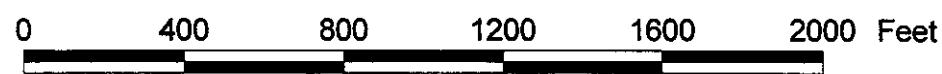
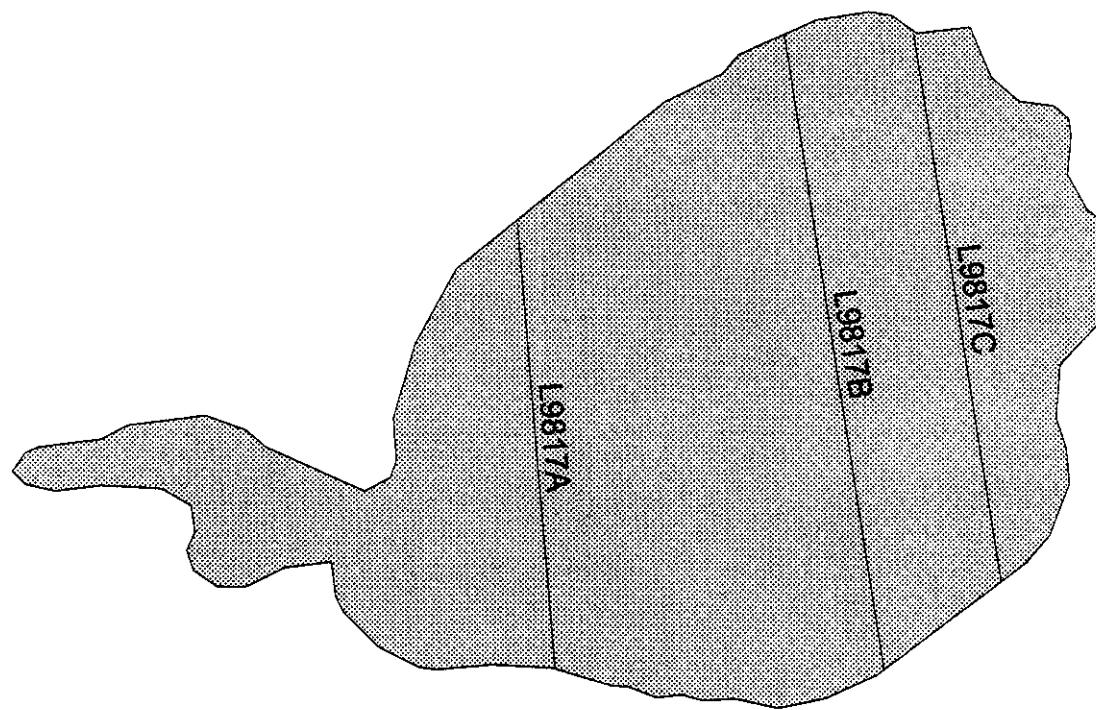


Figure 12. Estimated maximum volumes of water likely to be permitted for winter withdrawal from eastern NPR-A lakes surveyed during 1999 (lakes with no fish concern show total lake volume, lakes with fish concern show 15% of minimum winter volume, M9914 and M9923 are identified as having a fish concern based on evaluation by Nuiqsut elders).

## **LAKE SUMMARIES**

**L9817**



## Lake L9817

**Other Names:**

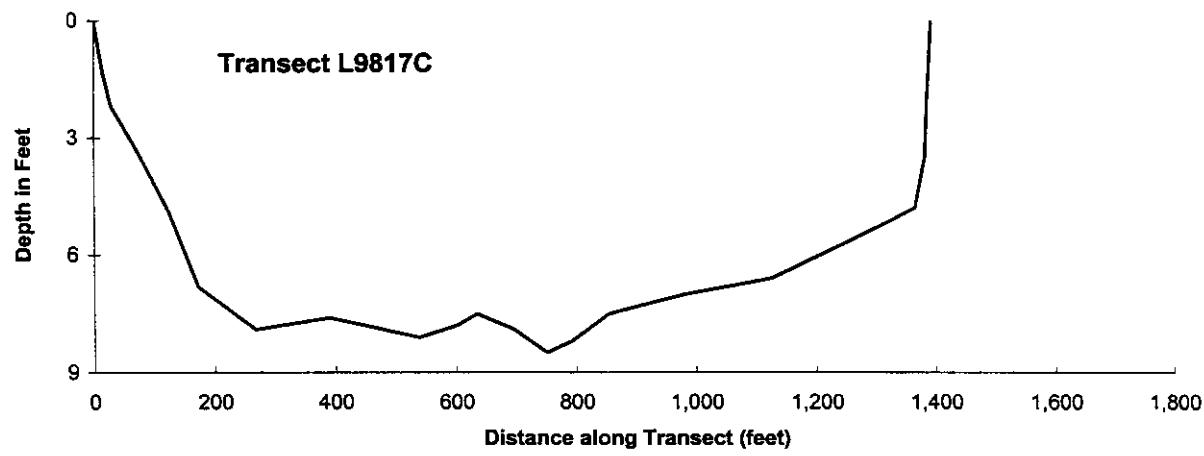
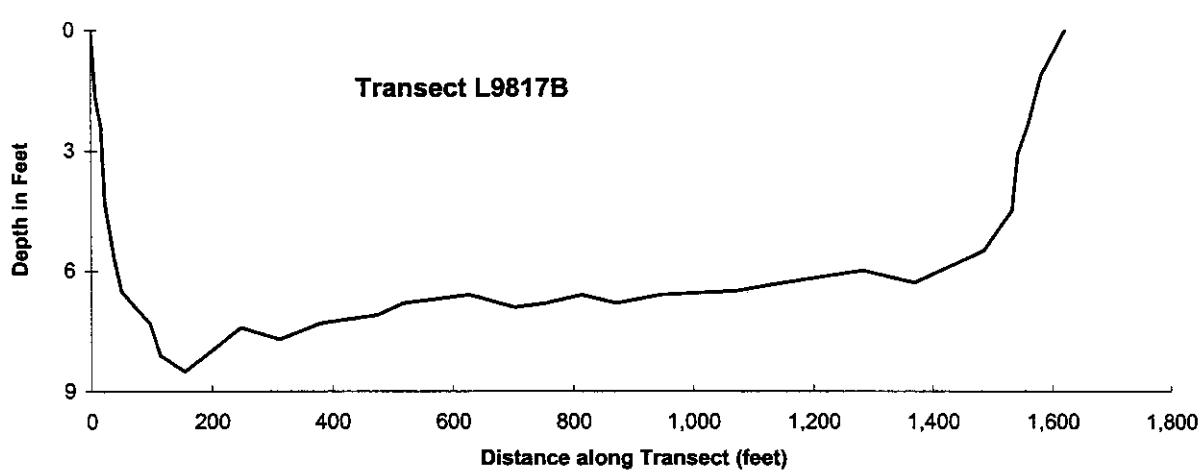
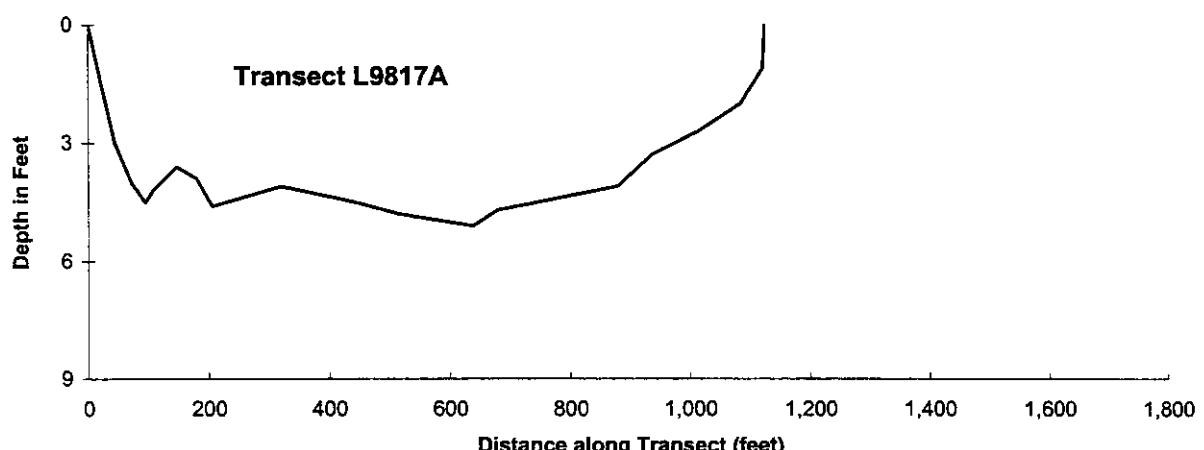
**Location:** 70°15.08'N 151°17.95'W  
**USGS Quad Sheet:** Harrison Bay A-3: T10N R3E Sect. 10  
**Habitat:** Tundra lake  
**Area:** 75 acres  
**Maximum Depth:** 9 feet  
**Active Outlet:**  
**Spec. Conductance:** 325  $\mu\text{S}/\text{cm}$   
**pH:** 8.0  
**Calculated Volume:** 72.2 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Hardness [CaCO <sub>3</sub> ] (mg/l)	Total	Total	Source
						Dissolved Solids (mg/l)	Total	

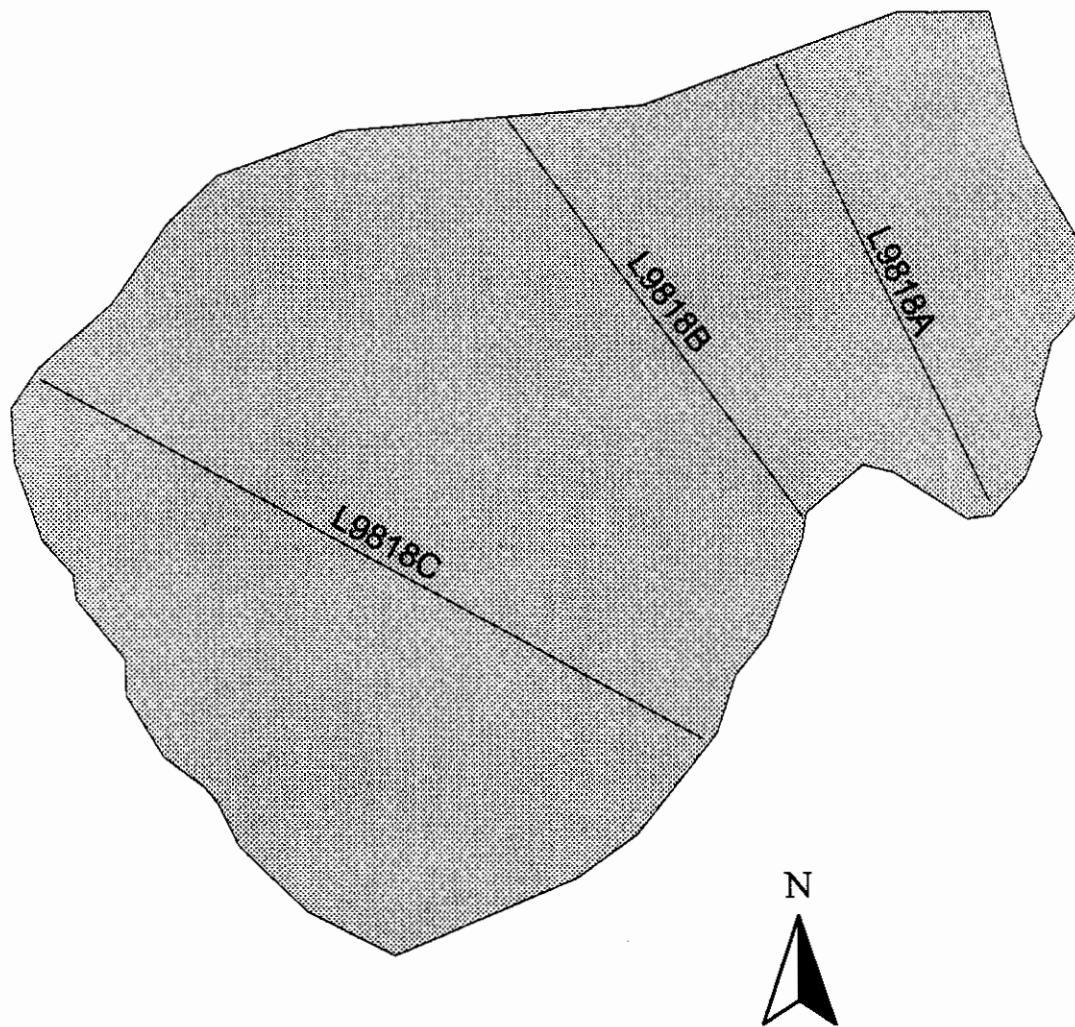
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number
				Caught
Gill Net	Jul 17 99	7.5	None	0





**L9818**



0    200    400    600    800    1000 Feet

**Lake L9818****Other Names:**

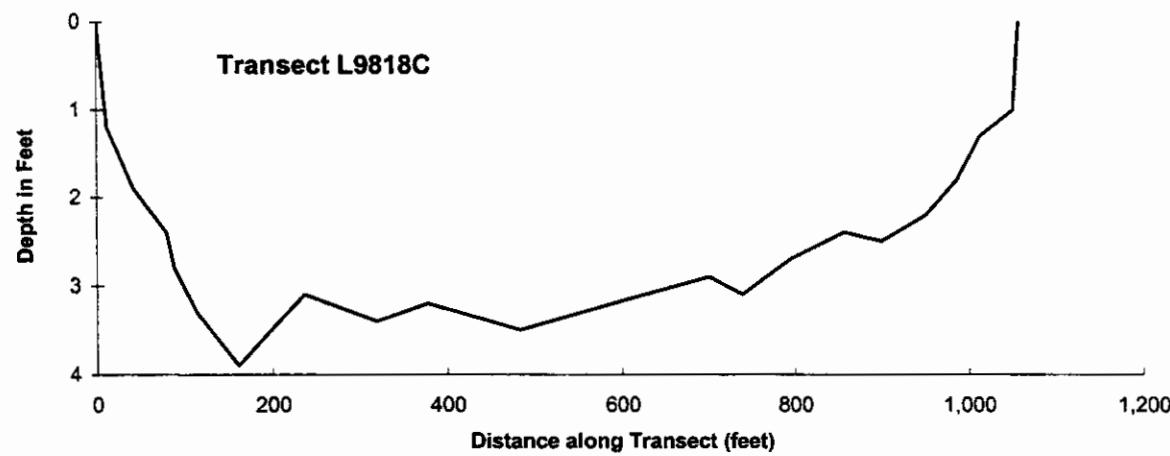
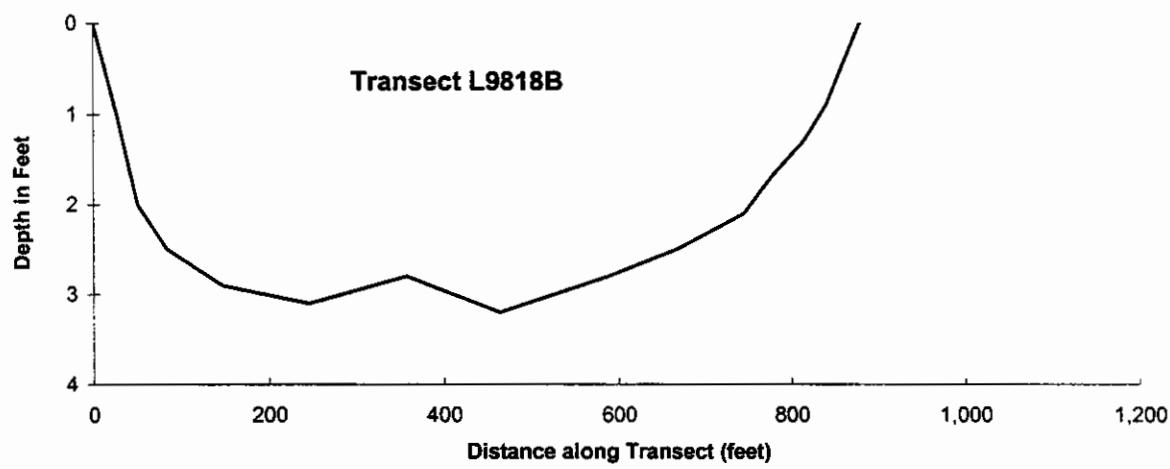
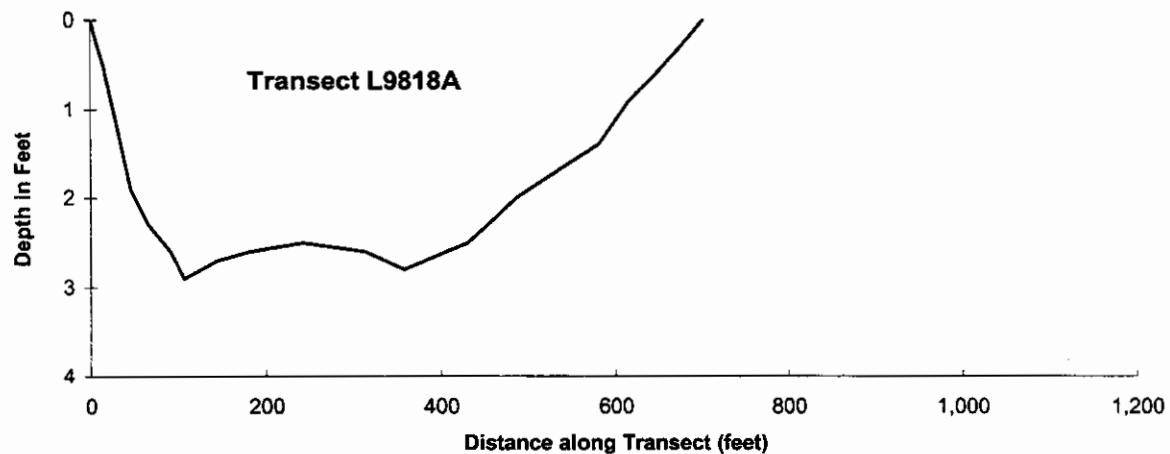
**Location:** 70°13.91'N 151°21.95'W  
**USGS Quad Sheet:** Harrison Bay A-3: T10N R3E Sect. 10  
**Habitat:** Tundra lake  
**Area:** 33 acres  
**Maximum Depth:** 4 feet  
**Active Outlet:** No  
**Spec. Conductance:** 256  $\mu\text{S}/\text{cm}$   
**pH:** 7.9  
**Calculated Volume:** 14.1 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source

**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 17 99	7.1	None	0



## Lake L9819

### Other Names:

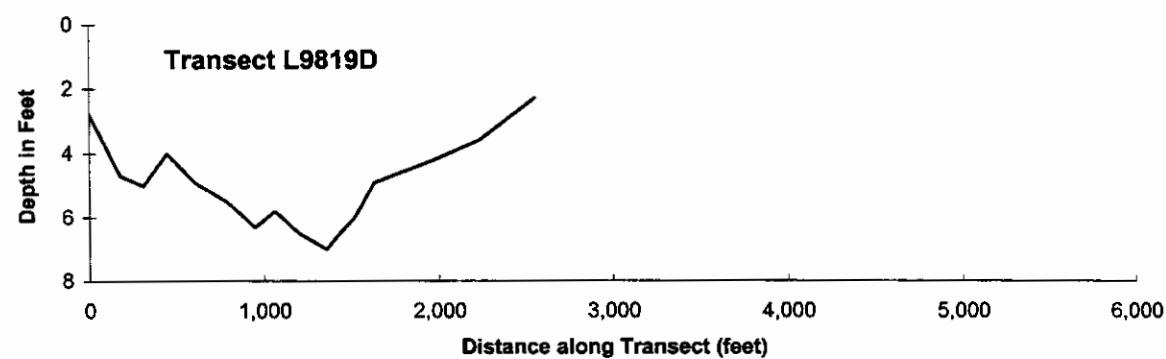
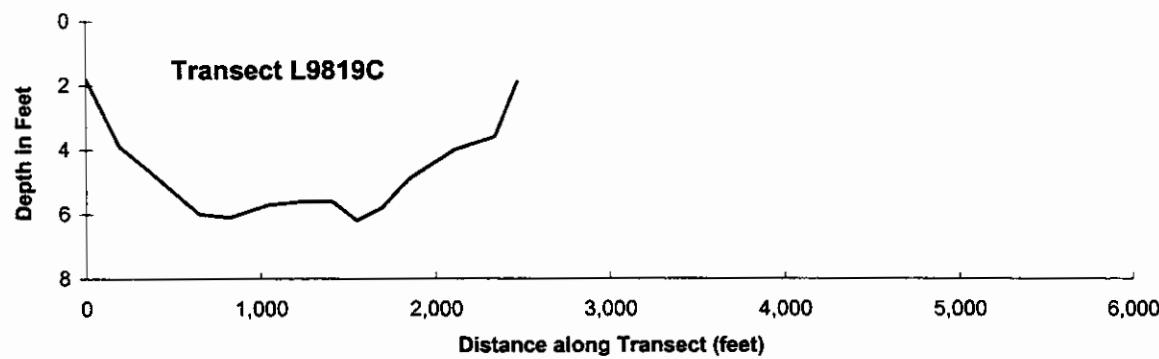
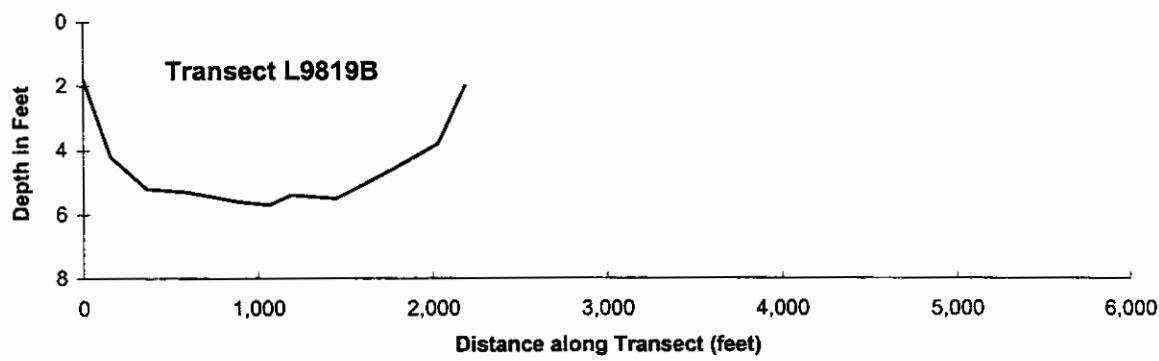
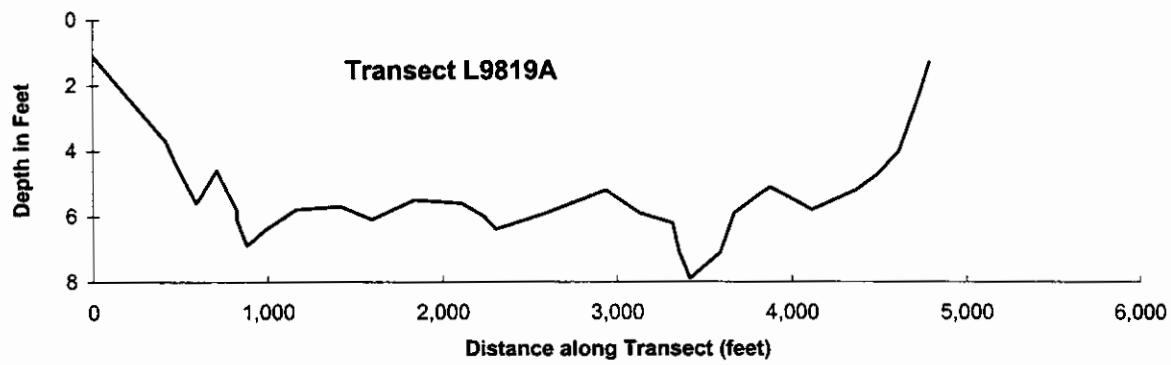
**Location:** 70°16.18'N 151°21.16'W  
**USGS Quad Sheet:** Harrison Bay B-3: T11N R3E Sect. 34  
**Habitat:** Tundra lake  
**Area:** 245 acres  
**Maximum Depth:** 7.9 feet  
**Active Outlet:**  
**Spec. Conductance:** 177  $\mu\text{S}/\text{cm}$   
**pH:** 8.0  
**Calculated Volume:** 207.7 million gallons  
**Permittable Volume:** No fish concern

### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)

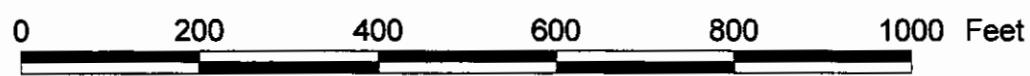
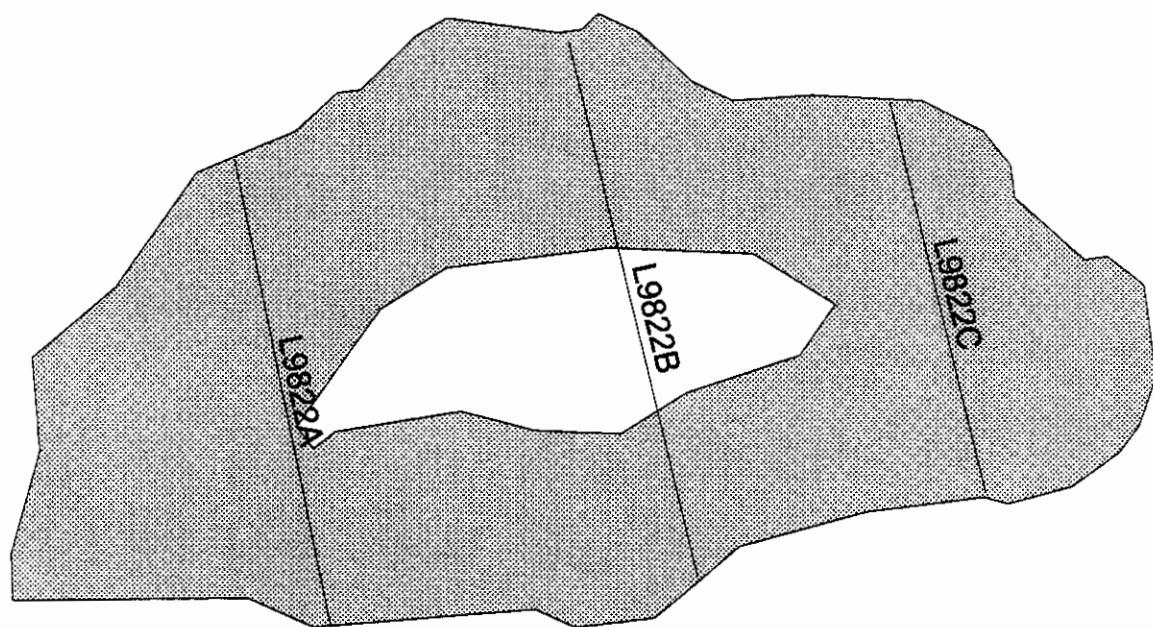
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 19 99	7.2	None	0





**L9822**



**Lake L9822****Other Names:**

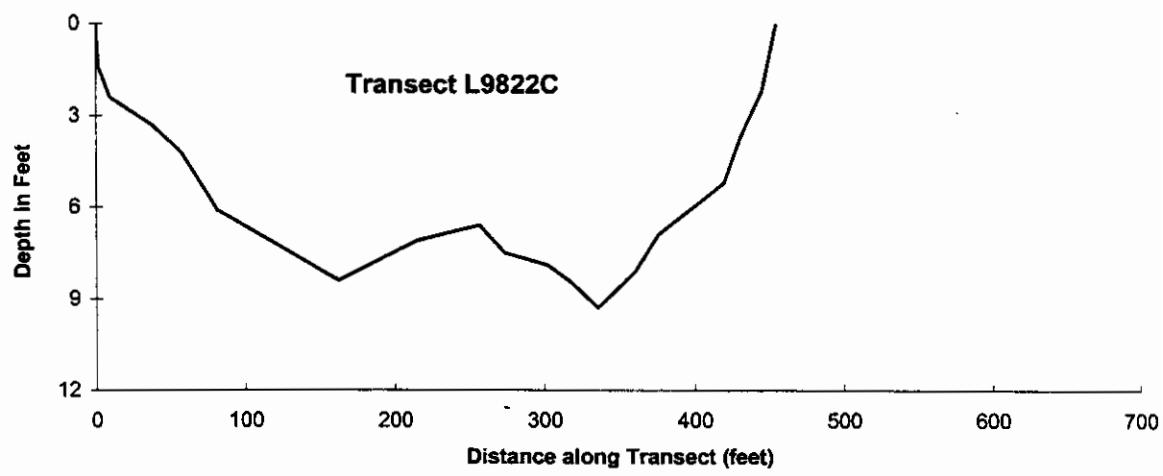
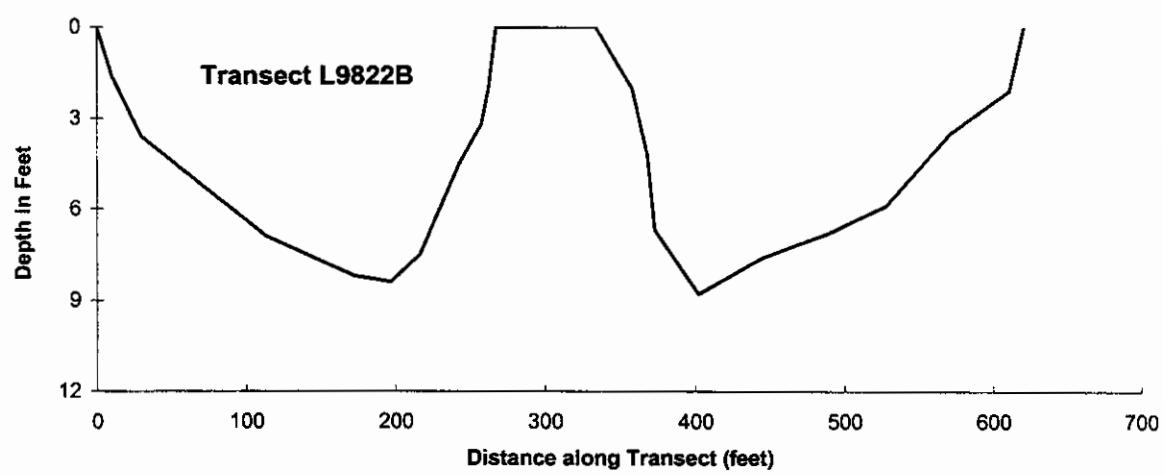
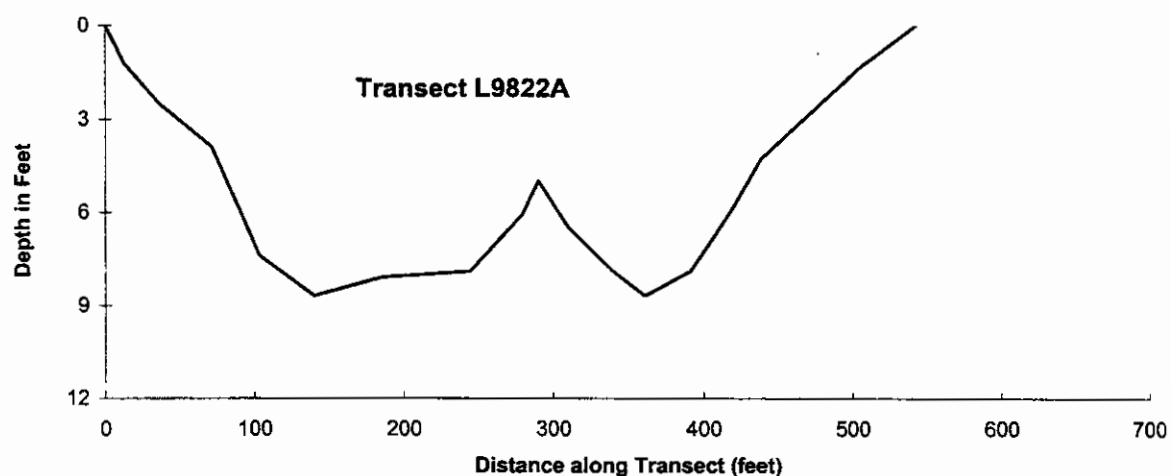
**Location:** 70°15.15'N 151°17.47'W  
**USGS Quad Sheet:** Harrison Bay B-3: T10N R3E Sect. 2  
**Habitat:** Oxbow lake (off Ublutuoch R.)  
**Area:** 12 acres  
**Maximum Depth:** 11 feet  
**Active Outlet:**  
**Spec. Conductance:** 108  $\mu\text{S}/\text{cm}$   
**pH:** 7.9  
**Calculated Volume:** 13.8 million gallons  
**Permittable Volume** 0.8 million gallons

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
						Dissolved Solids (mg/l)	
1998	12.1	2.6	8.6	2.2	30.6	44.0	J. Lobdell

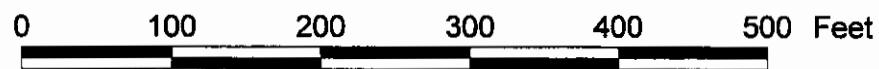
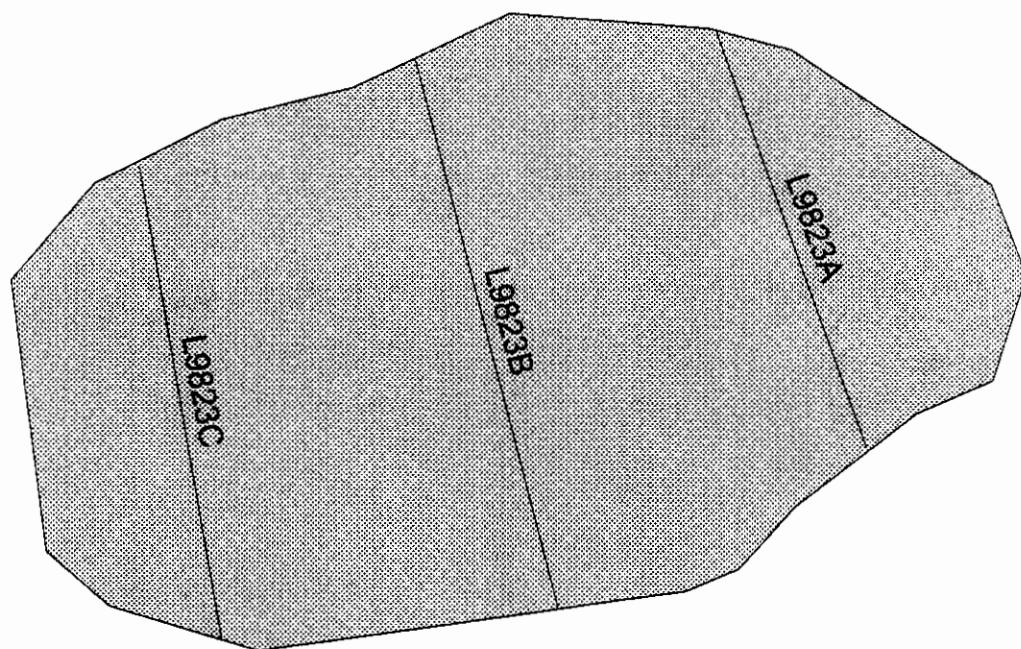
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number
				Caught
Gill Net	Jul 16 99	6.5	None	0





**L9823**



### Lake L9823

**Other Names:**

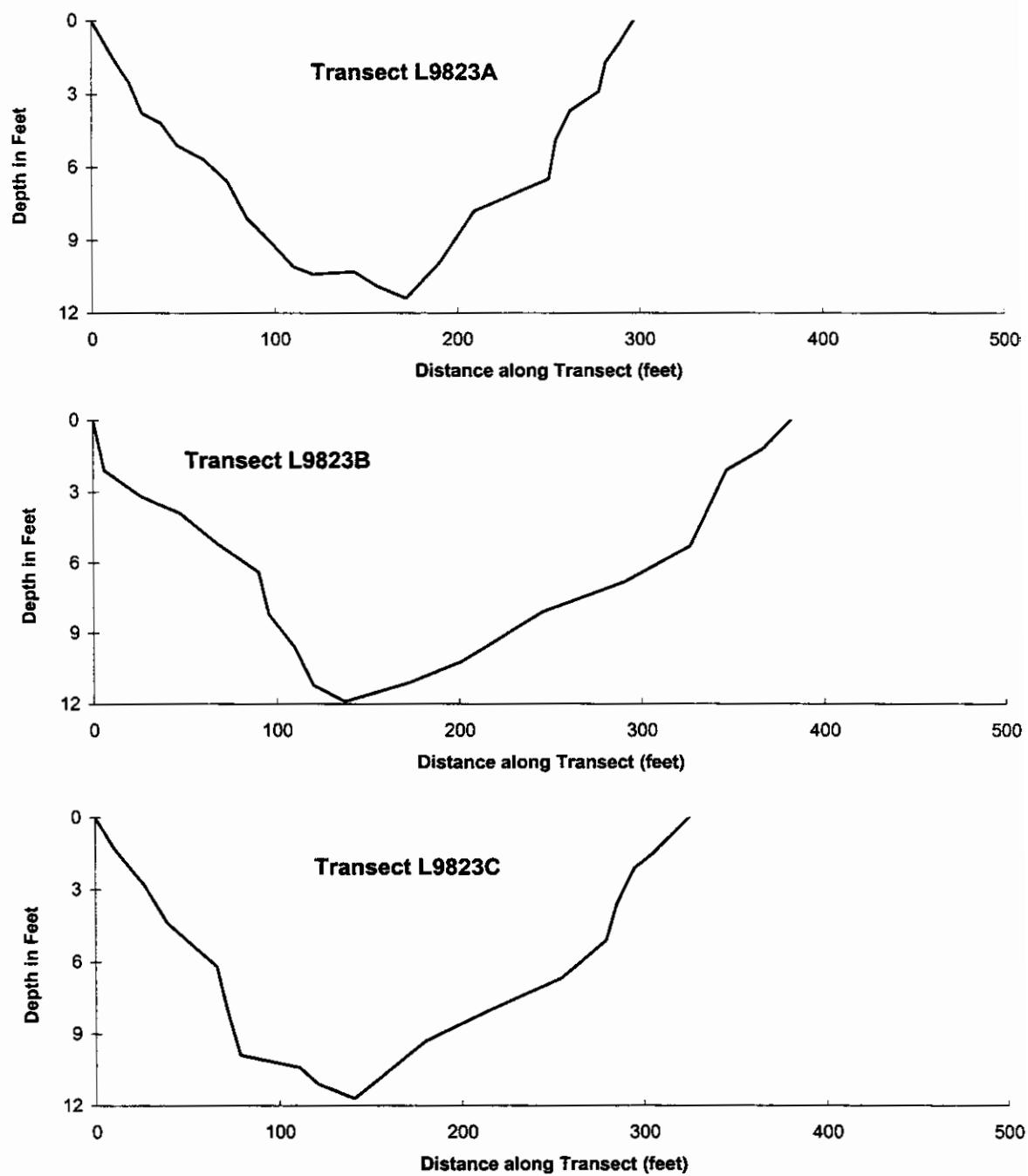
**Location:** 70°15.08'N 151°17.95'W  
**USGS Quad Sheet:** Harrison Bay B-3: T10N R3E Sect. 2  
**Habitat:** Tundra lake  
**Area:** 5 acres  
**Maximum Depth:** 12 feet  
**Active Outlet:**  
**Spec. Conductance:** 215  $\mu\text{S}/\text{cm}$   
**pH:** 7.8  
**Calculated Volume:** 6.4 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1998	44.4	8.9	22.4	6.5	82.6	168.0	J. Lobdell

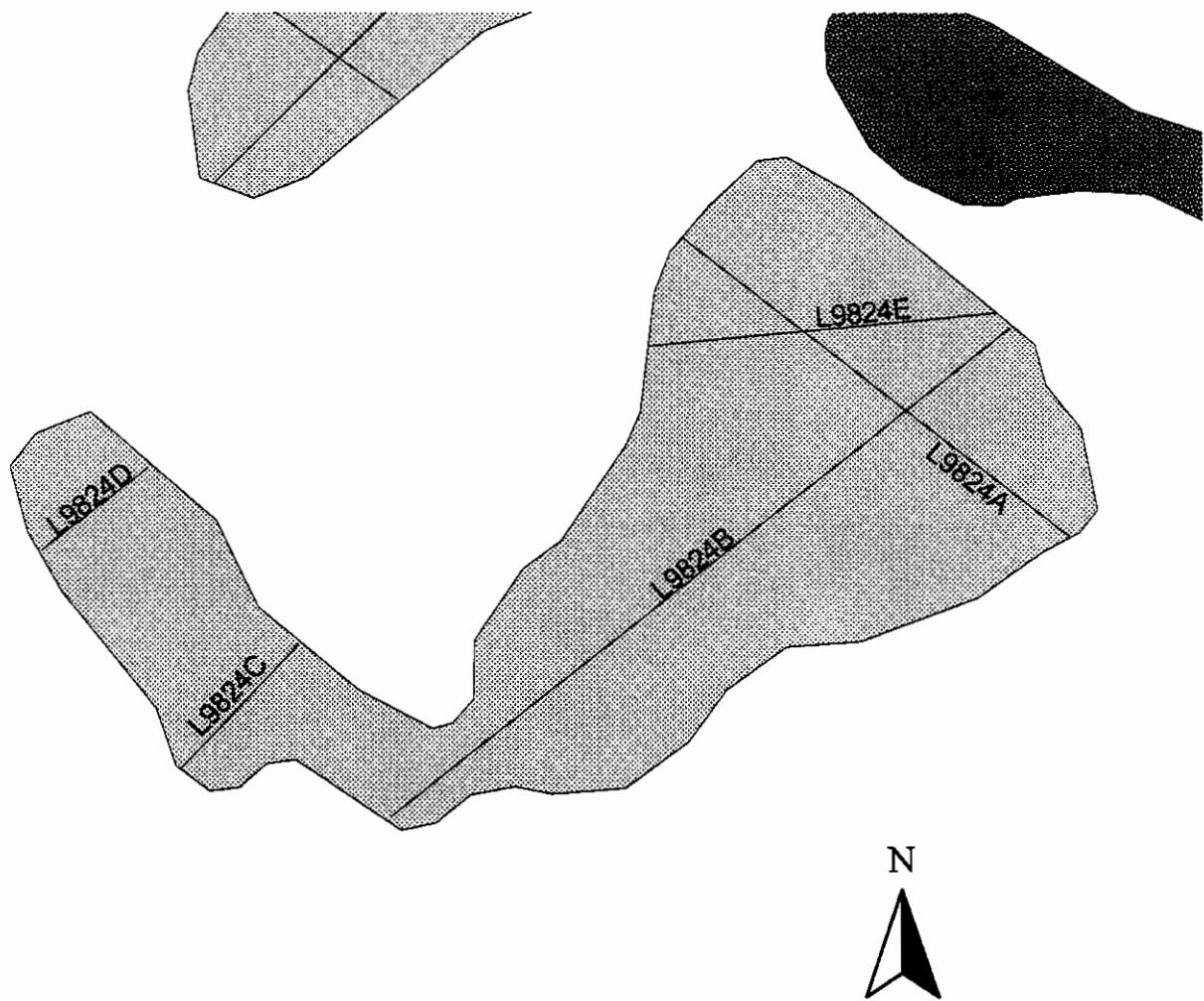
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 16 99	6.3	None	0





# L9824



0      300      600      900      1200      1500 Feet

## Lake L9824

### Other Names:

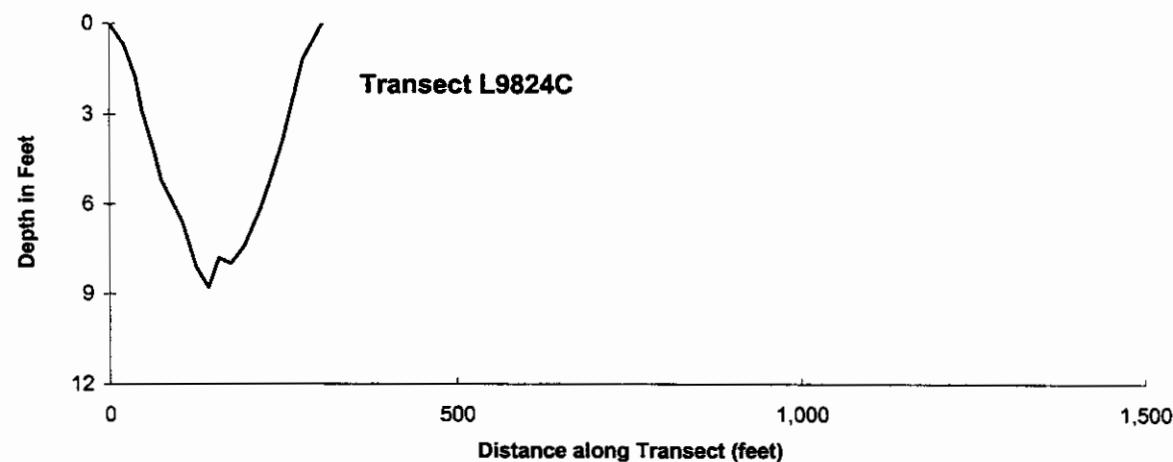
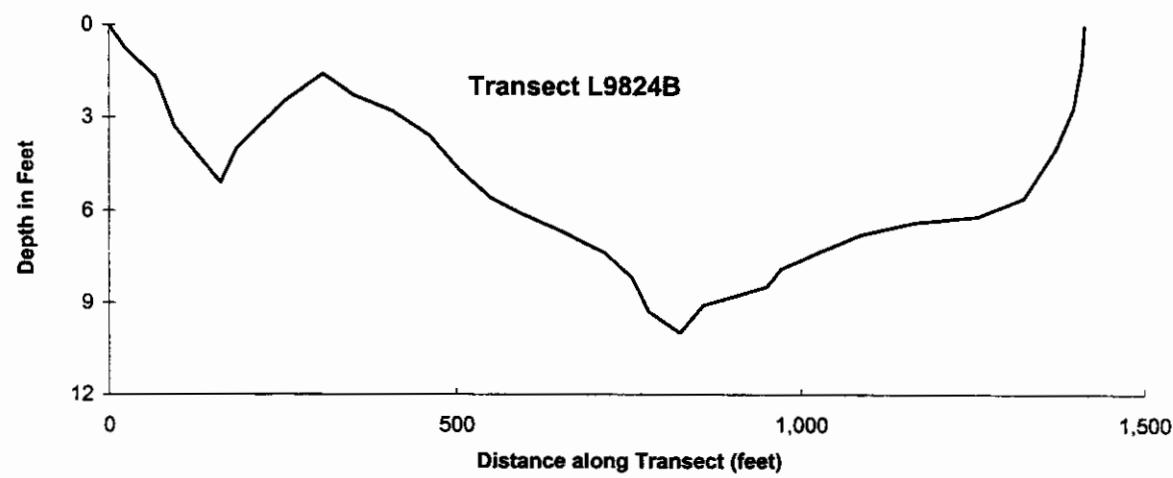
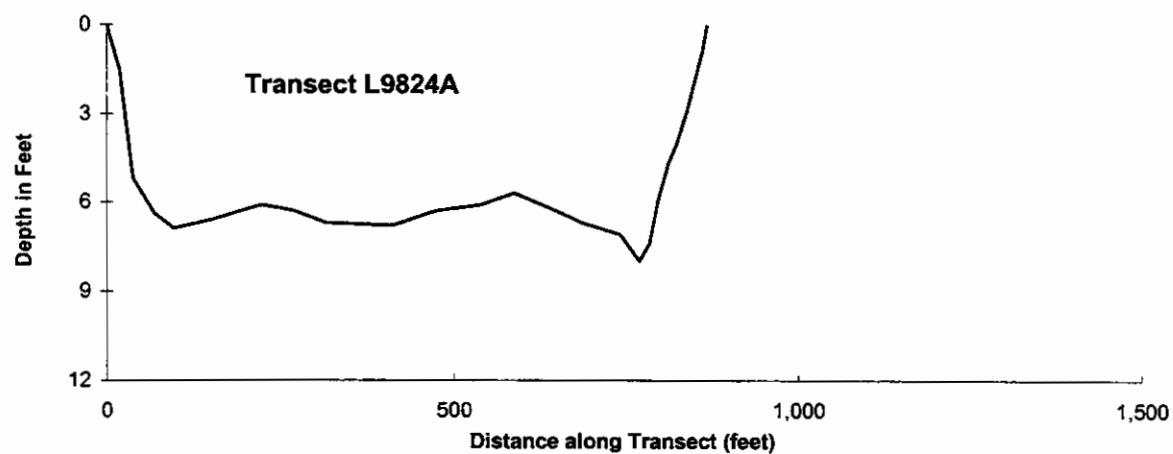
**Location:** 70°17.04'N 151°16.04'W  
**USGS Quad Sheet:** Harrison Bay B-3: T11N R3E Sect. 25  
**Habitat:** Perched lake (frequent flooding)  
**Area:** 22 acres  
**Maximum Depth:** 11 feet  
**Active Outlet:**  
**Spec. Conductance:** 56  $\mu\text{S}/\text{cm}$   
**pH:** 7.8  
**Calculated Volume:** 25.5 million gallons  
**Permittable Volume:** 1.4 million gallons

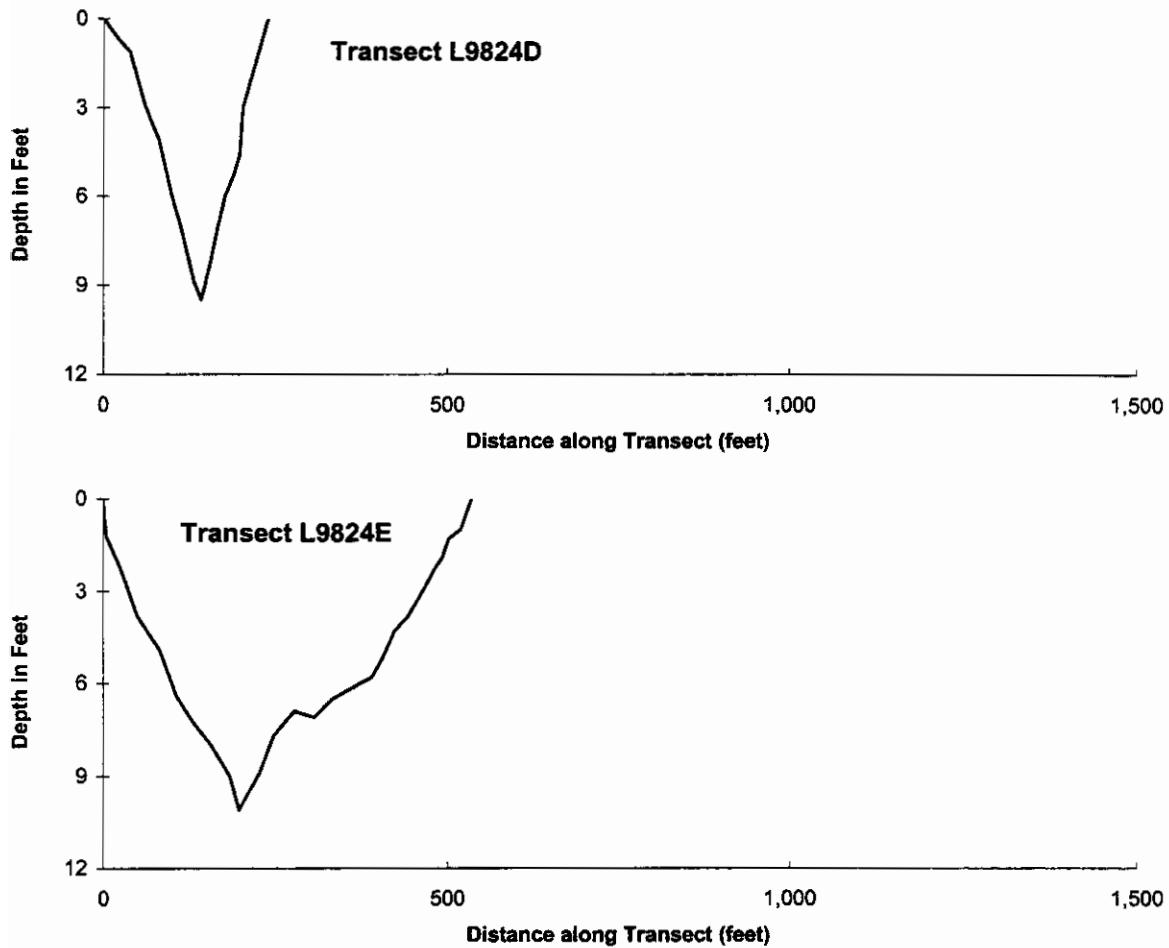
### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1998	5.3	1.7	5.2	1.4	19.0	<35	J. Lodbell

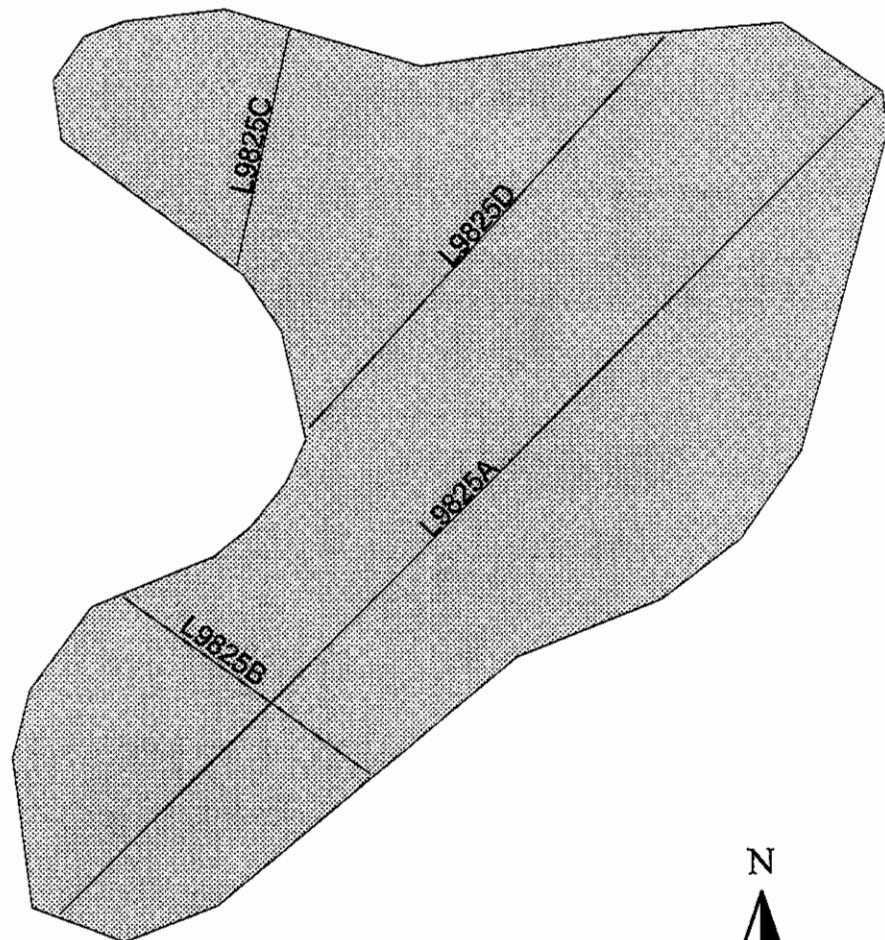
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 18 99	6.7	None	0





**L9825**



0 200 400 600 800 1000 Feet

## Lake L9825

### Other Names:

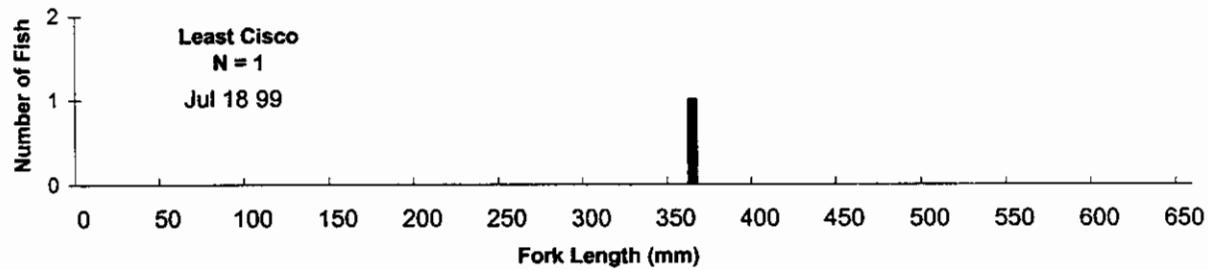
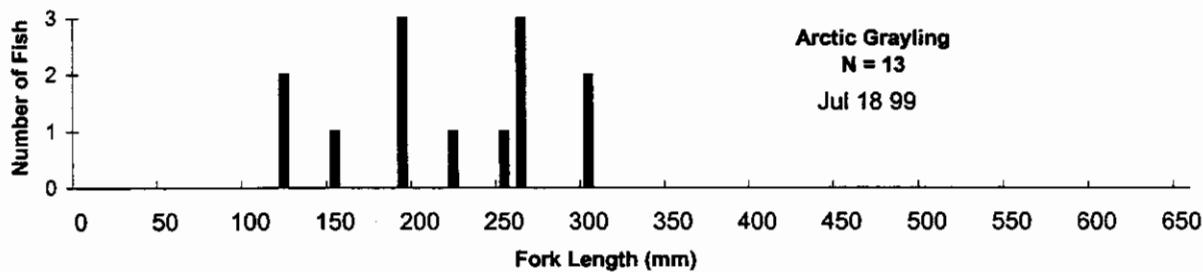
Location:  $70^{\circ}17.29'N\ 151^{\circ}16.28'W$   
USGS Quad Sheet: Harrison Bay B-3: T11N R3E Sect. 24  
Habitat: Perched lake (frequent flooding)  
Area: 12 acres  
Maximum Depth: 15.3 feet  
Active Outlet:  
Spec. Conductance: 47  $\mu S/cm$   
pH: 7.9  
Calculated Volume: 20.2 million gallons  
Permittable Volume: 1.6 million gallons

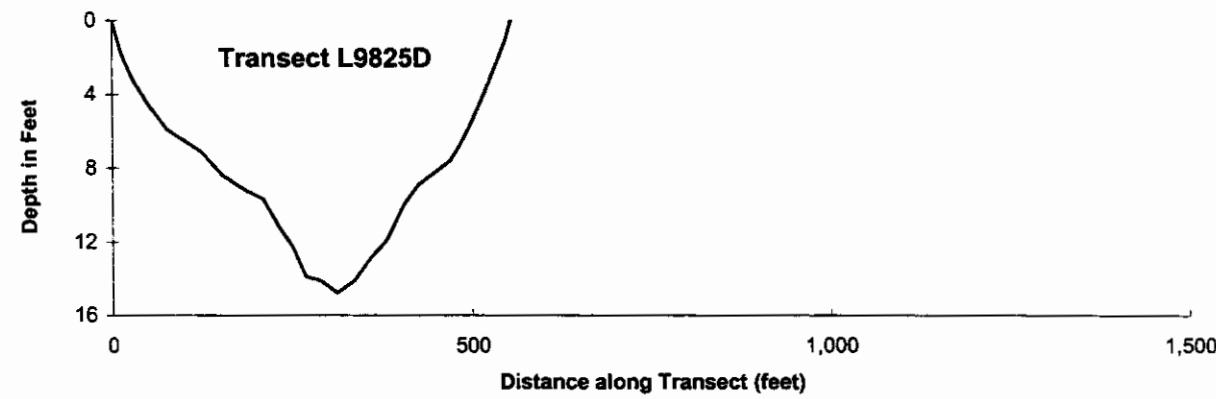
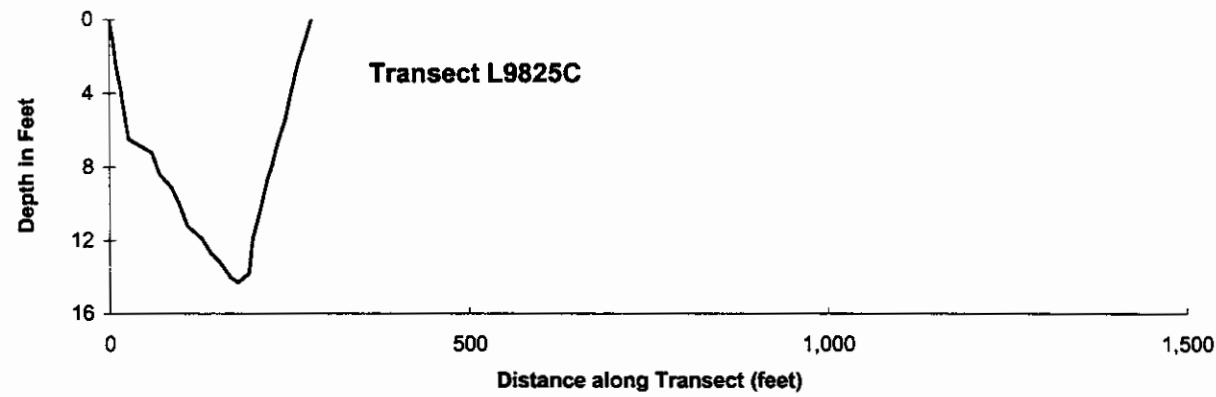
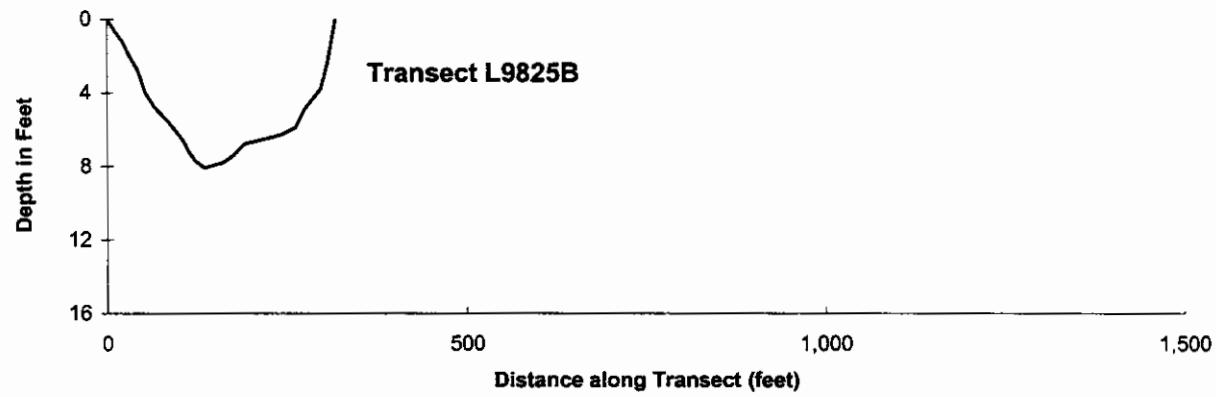
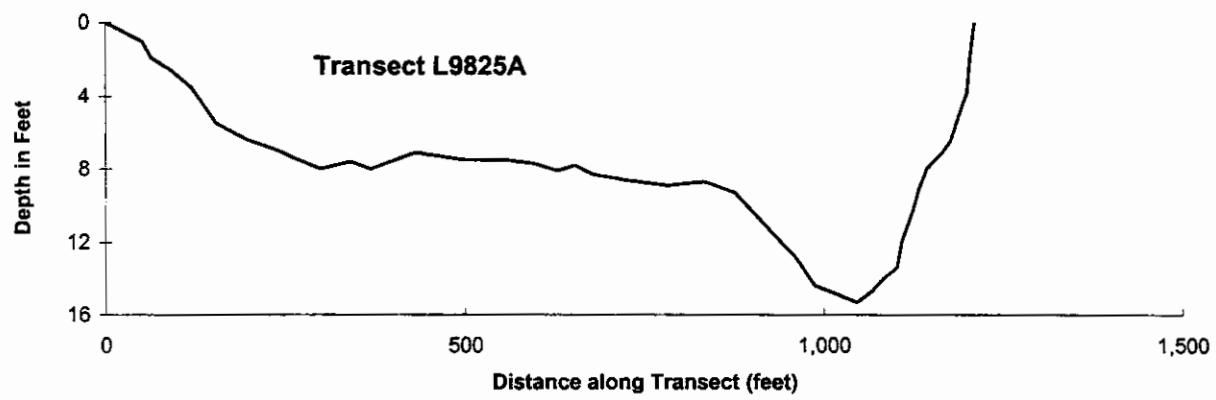
### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1998	4.5	1.4	4.4	1.2	15.9	<35	J. Lodbell

### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Jul 18 99	6.8	Arctic grayling	13	120-306
			Least cisco	1	364





## Lake L9832

**Other Names:**

**Location:** 70°15.30'N 151°21.66'W

**USGS Quad Sheet:** Harrison Bay B-3: T10N R3E Sect. 3

**Habitat:** Tundra lake

**Area:** 243 acres

**Maximum Depth:** 2.8 feet

**Active Outlet:**

**Spec. Conductance:** 203  $\mu\text{S}/\text{cm}$

**pH:** 8.0

**Calculated Volume:** 73.0 million gallons

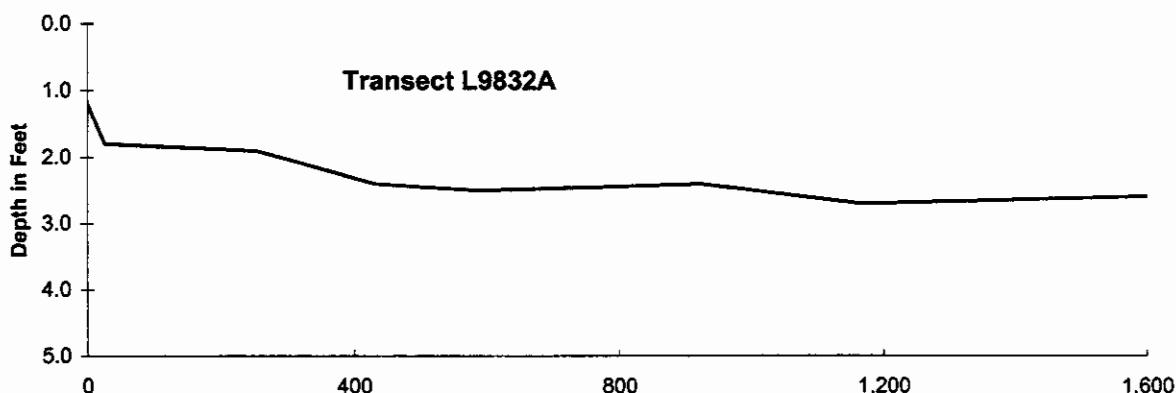
**Permittable Volume:** No fish concern

**Water Quality:**

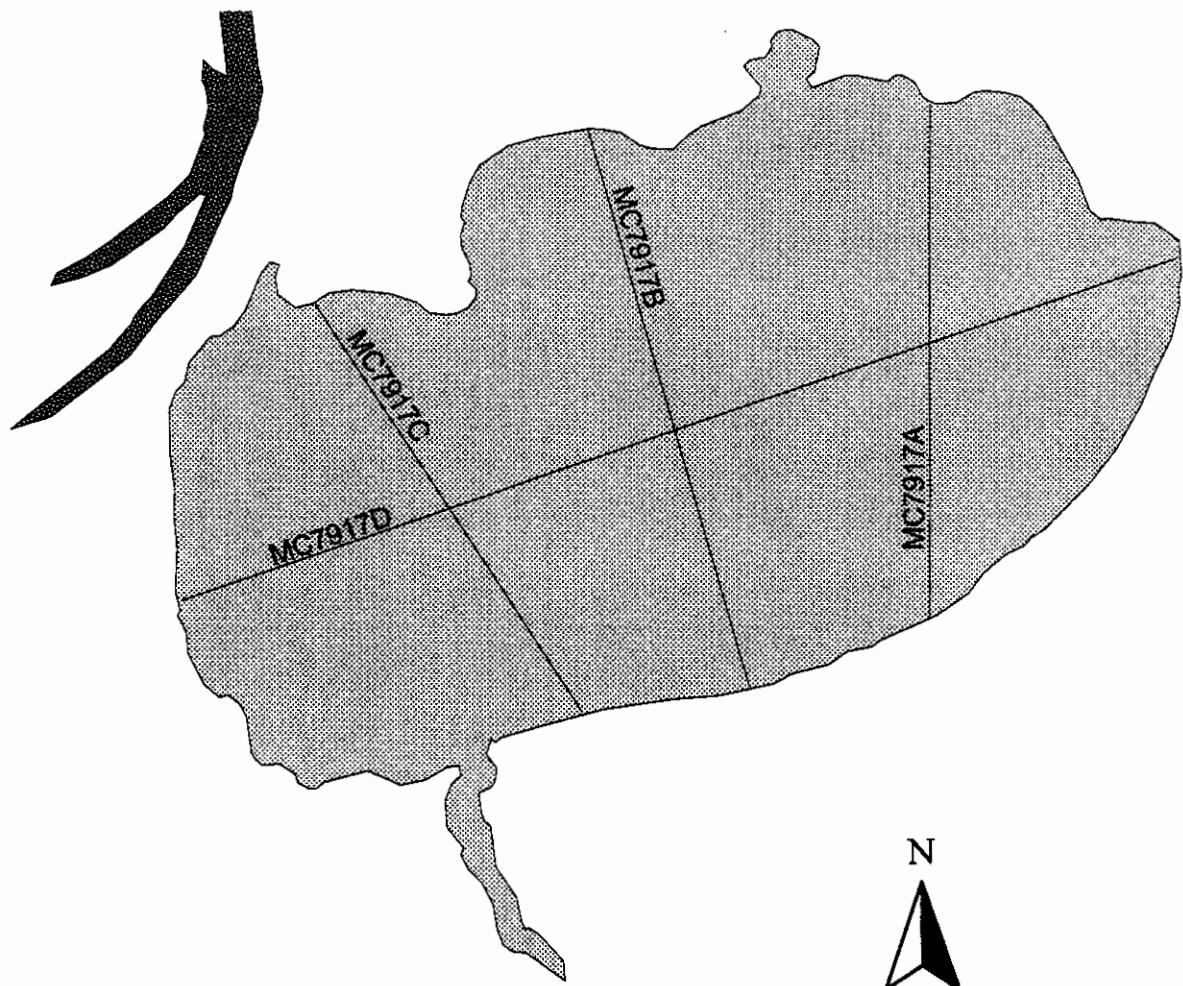
Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source

**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 19 99	5.2	None	0



# MC7917



0 800 1600 2400 3200 4000 Feet

### Lake MC7917

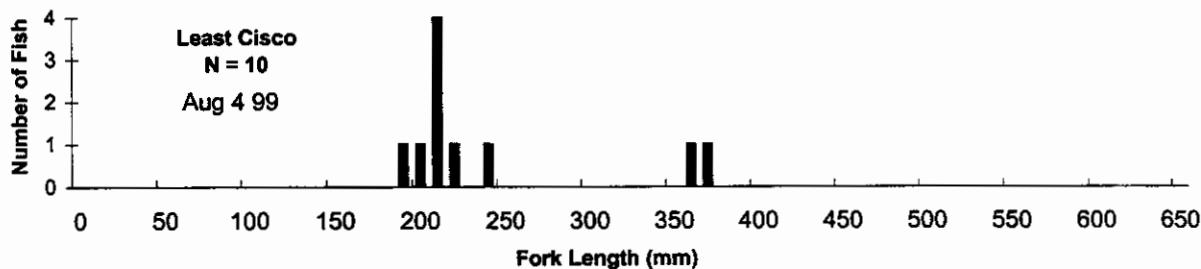
**Other Names:** L9910  
**Location:** 70°17.40'N 151°31.47'W  
**USGS Quad Sheet:** Harrison Bay B-3: T11N R2E Sect. 24  
**Habitat:** Drainage Lake  
**Area:** 294 acres  
**Maximum Depth:** 12.6 feet  
**Active Outlet:**  
**Spec. Conductance:** 163  $\mu\text{S}/\text{cm}$   
**pH:** 8.0  
**Calculated Volume:** 398.0 million gallons  
**Permittable Volume:** 26.5 million gallons

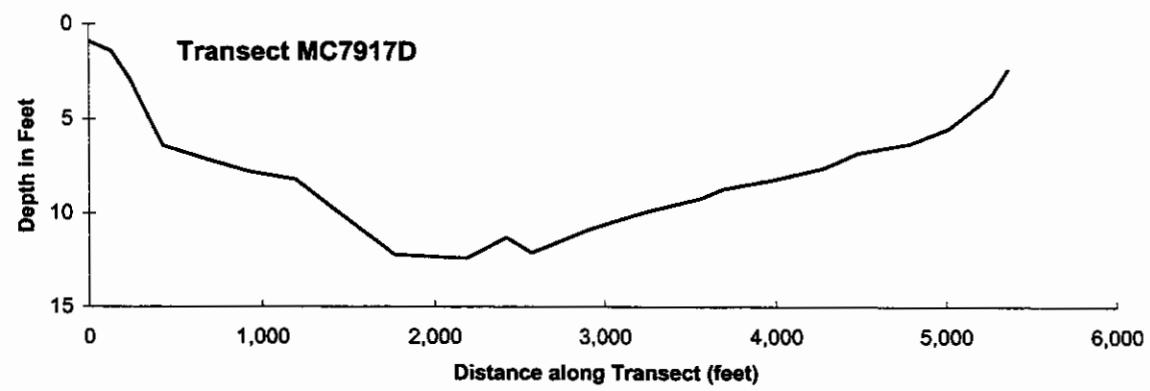
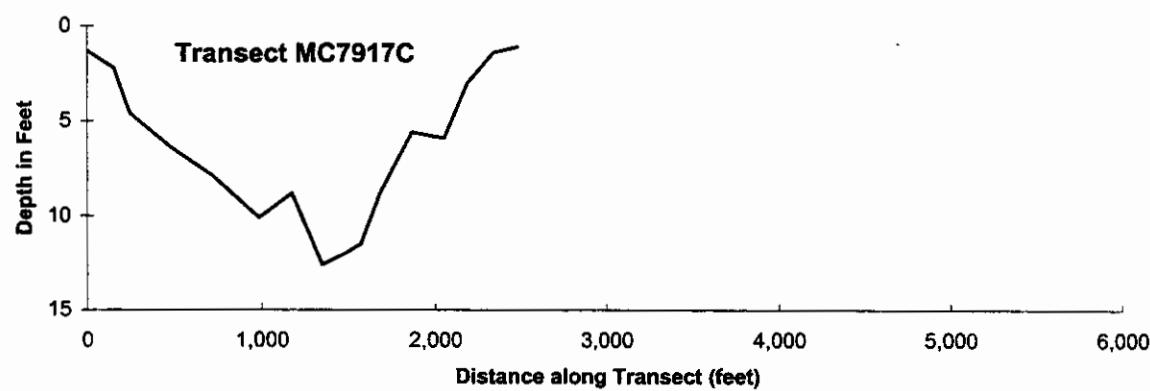
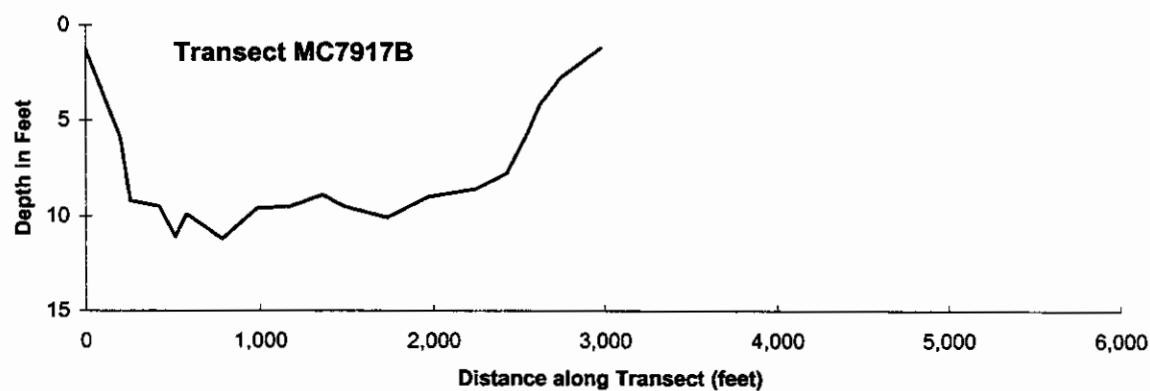
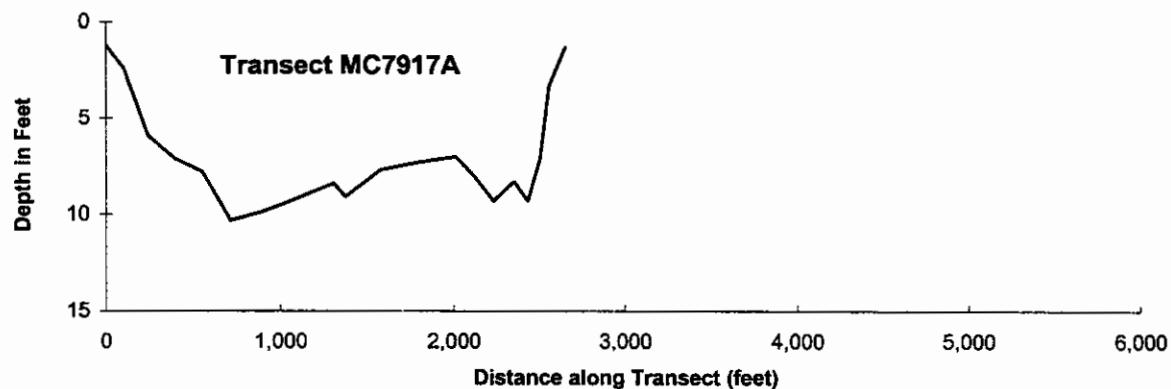
#### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	14.2	5.8	25.4	3.3	76.7	104.0	J. Lobdell

#### Catch Record:

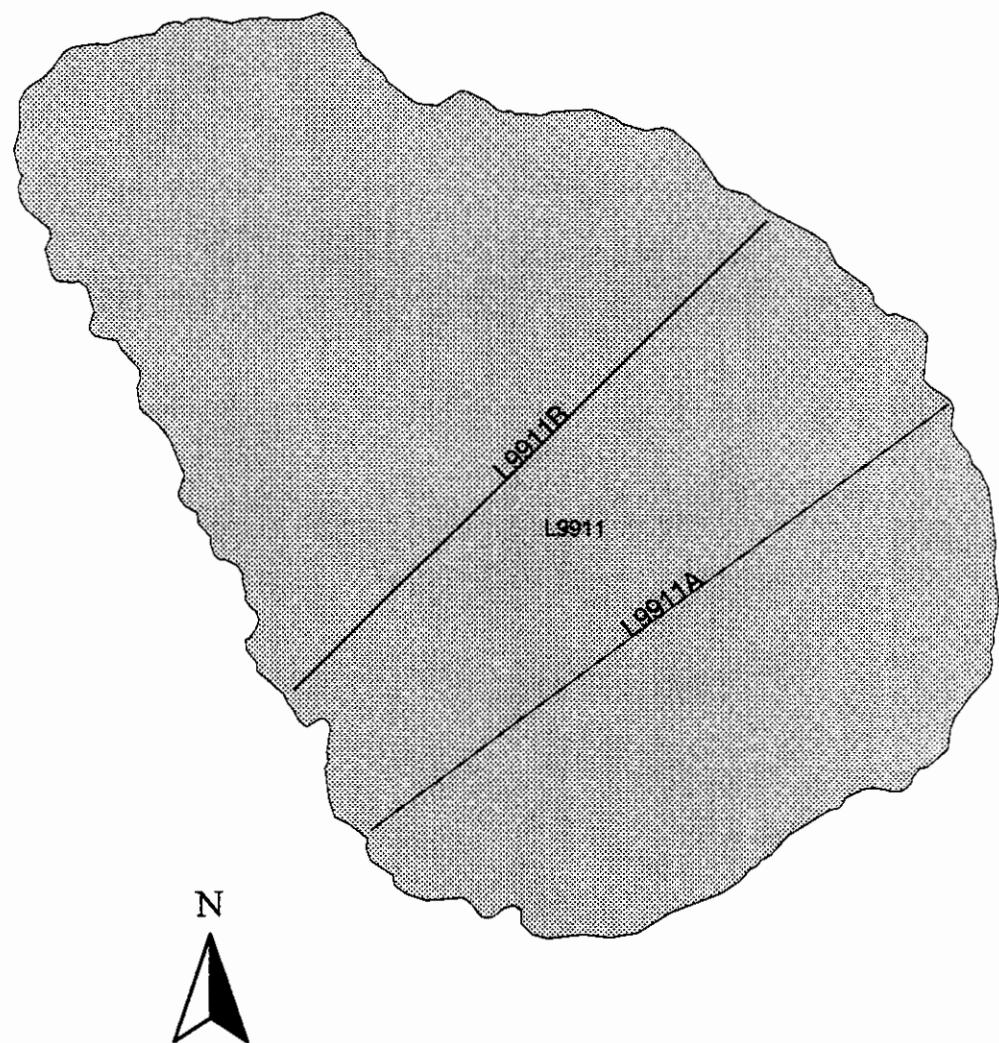
Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Sep 9 79	~24	None	0	
Gill Net	Aug 4 99	4.0	Least cisco	10	193-363







**L9911**



0    1000    2000    3000    4000    5000 Feet

## Lake L9911

### Other Names:

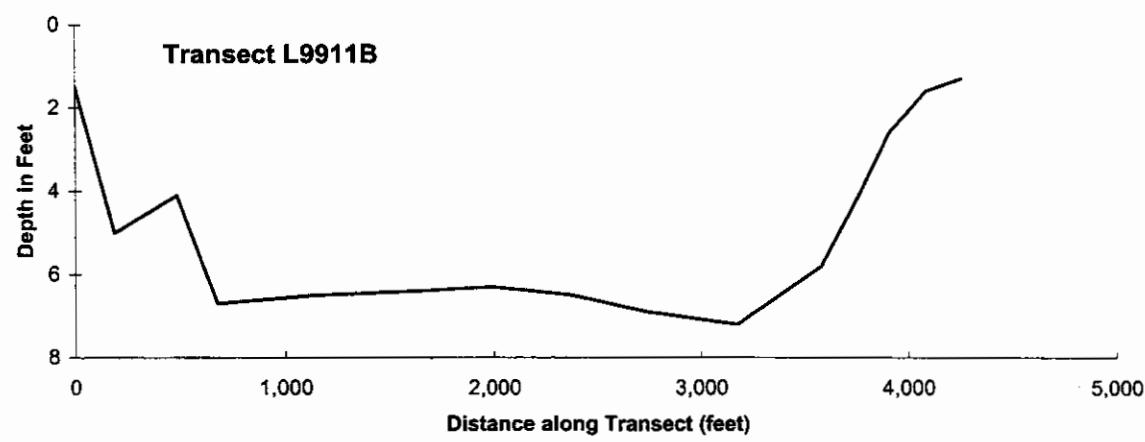
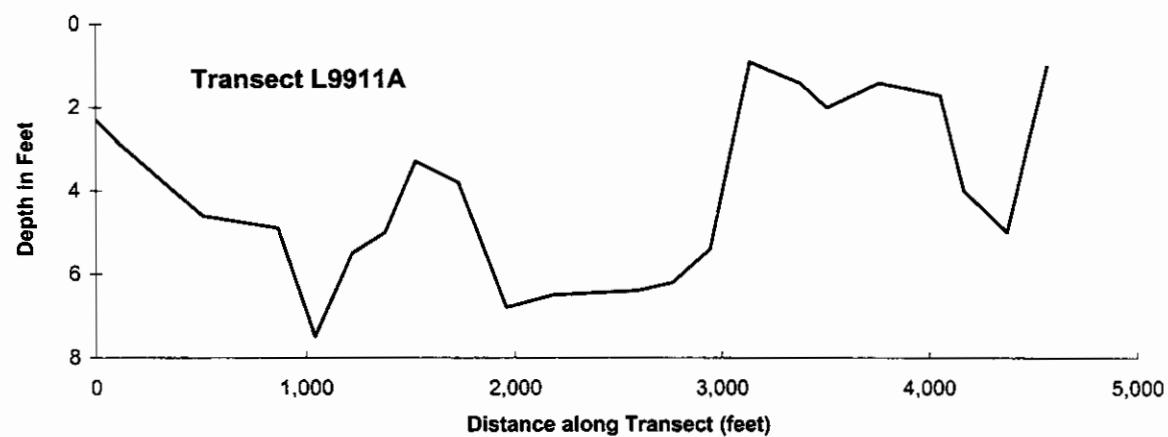
**Location:** 70°10.25'N 151°47.35'W  
**USGS Quad Sheet:** Harrison Bay A-3: Boundary of T9N and T10N R1E Sect. 1/36  
**Habitat:** Tundra Lake  
**Area:** 540 acres  
**Maximum Depth:** 8 feet  
**Active Outlet:**  
**Spec. Conductance:** 179  $\mu\text{S}/\text{cm}$   
**pH:** 8.2  
**Calculated Volume:** 464.6 million gallons  
**Permittable Volume:** No fish concern

### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	11.9	5.0	27.5	3.8	84.2	118.0	J. Lobdell

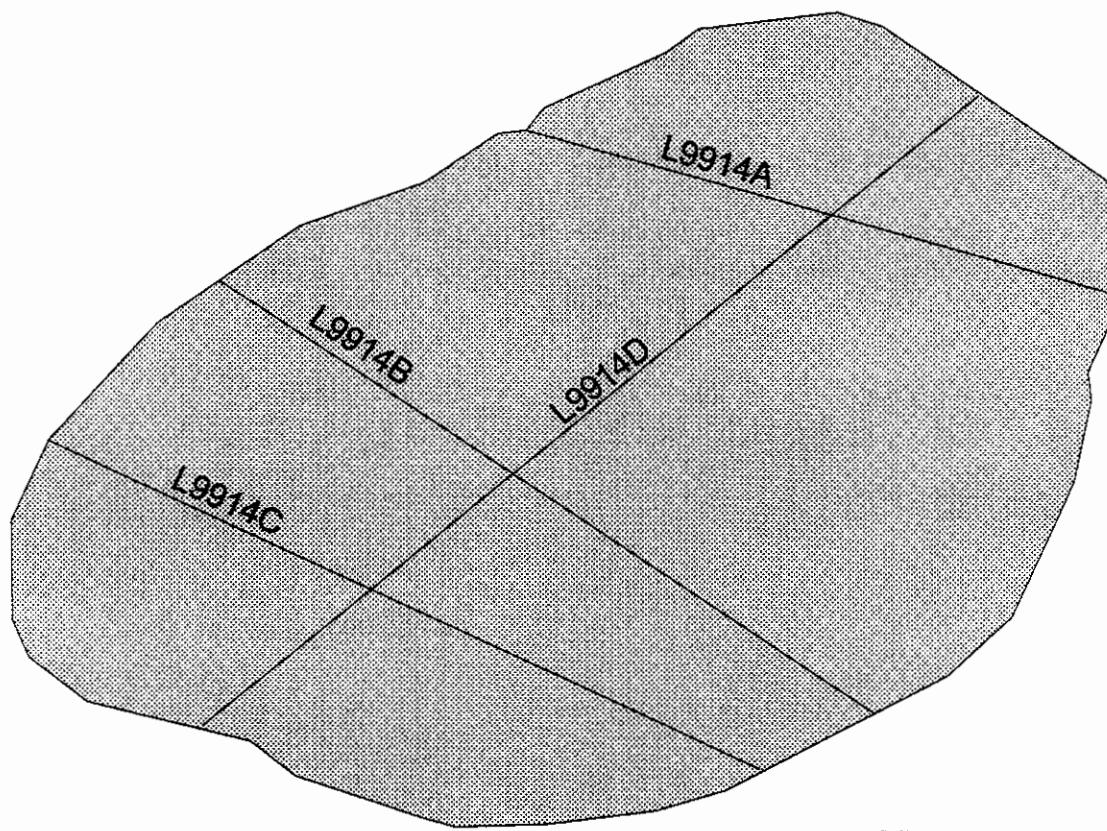
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 25 99	4.1	None	0





**L9914**



0 200 400 600 800 1000 Feet

## Lake L9914

### Other Names:

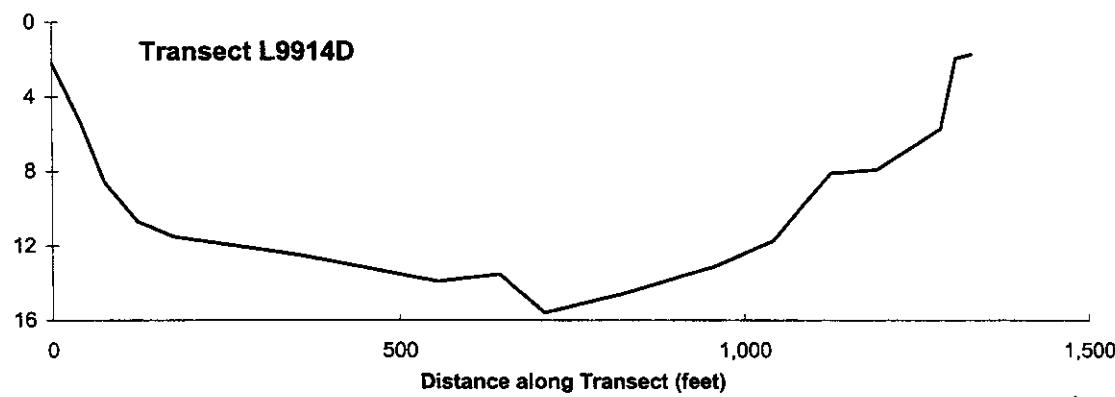
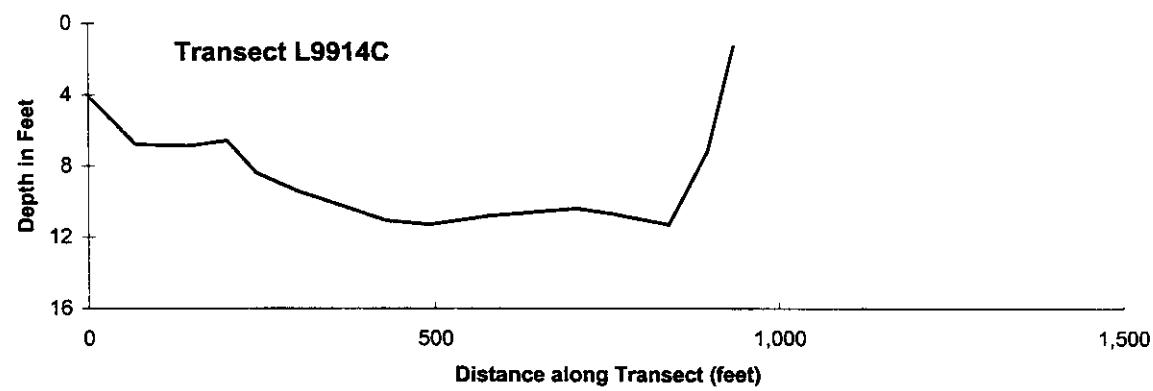
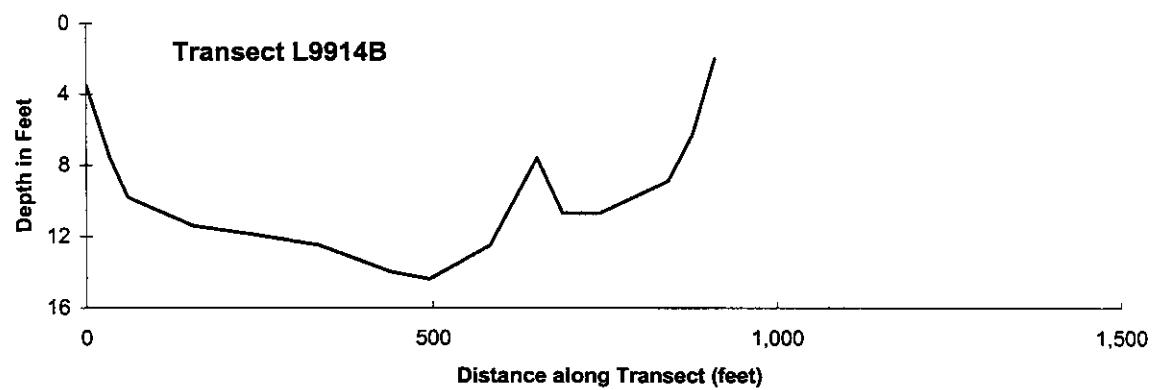
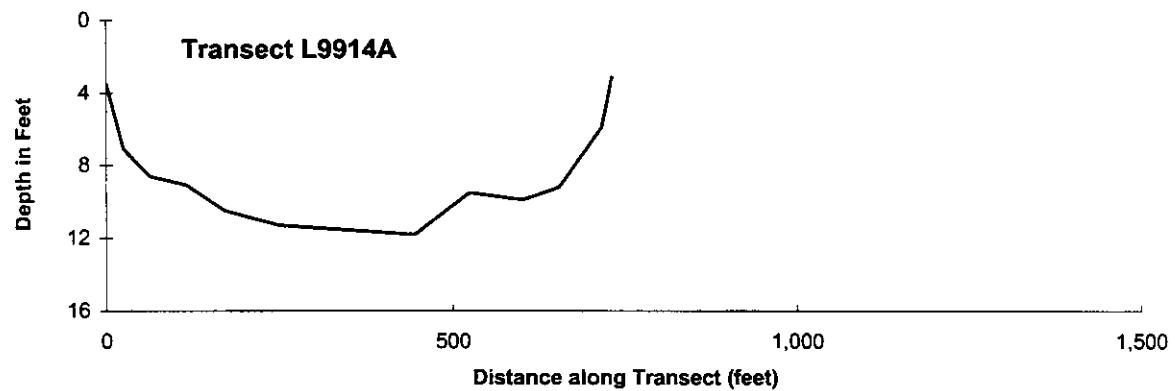
**Location:** 70°18.93'N 151°27.90'W  
**USGS Quad Sheet:** Harrison Bay B-3: T11N R3E Sect. 7  
**Habitat:** Perched Lake (Infrequent Flooding?)  
**Area:** 24 acres  
**Maximum Depth:** 16 feet  
**Active Outlet:**  
**Spec. Conductance:** 394 µS/cm  
**pH:** 8.4  
**Calculated Volume:** 42.0 million gallons  
**Permittable Volume:** 3.5 million gallons

### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
none							

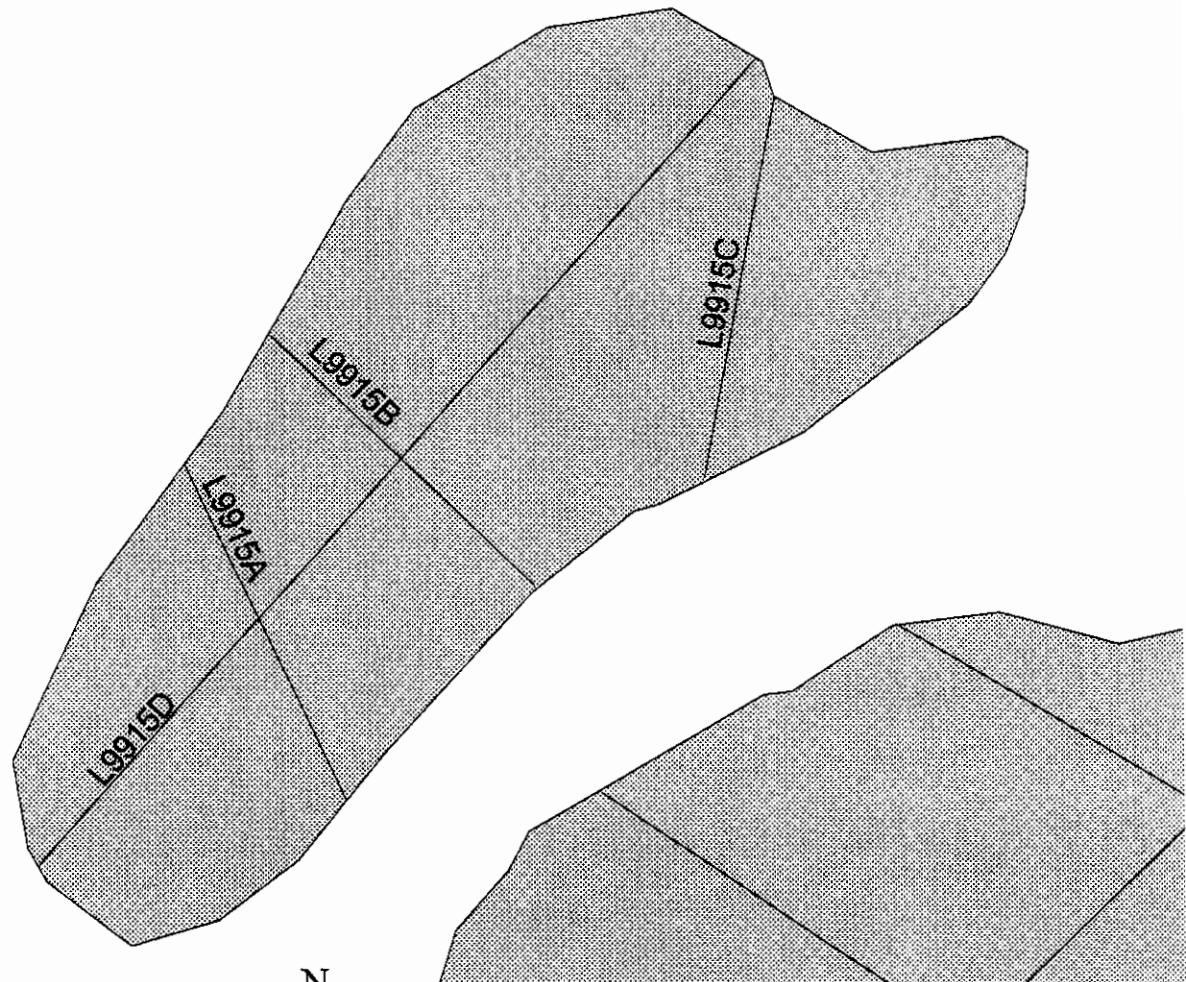
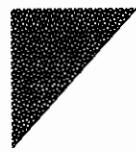
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Aug 4 99	2.6	None	0





**L9915**



0    200    400    600    800    1000 Feet

## Lake L9915

### Other Names:

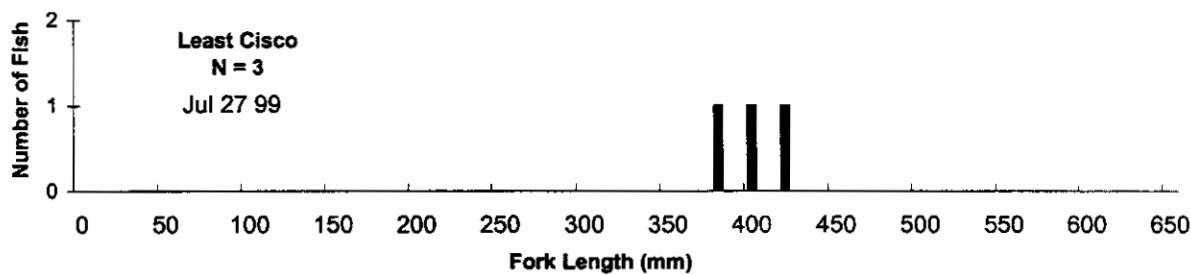
Location: 70°18.65'N 151°29.53'W  
USGS Quad Sheet: Harrison Bay B-3: T11N R3E Sect. 18  
Habitat: Perched Lake (Frequent Flooding?)  
Area: 24 acres  
Maximum Depth: 14.4 feet  
Active Outlet:  
Spec. Conductance: 189  $\mu\text{S}/\text{cm}$   
pH: 8.3  
Calculated Volume: 37.7 million gallons  
Permittable Volume: 2.9 million gallons

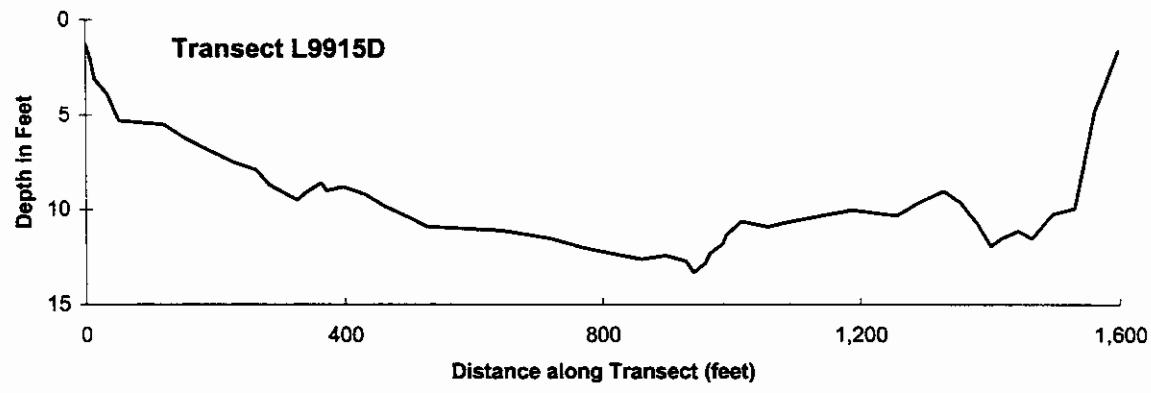
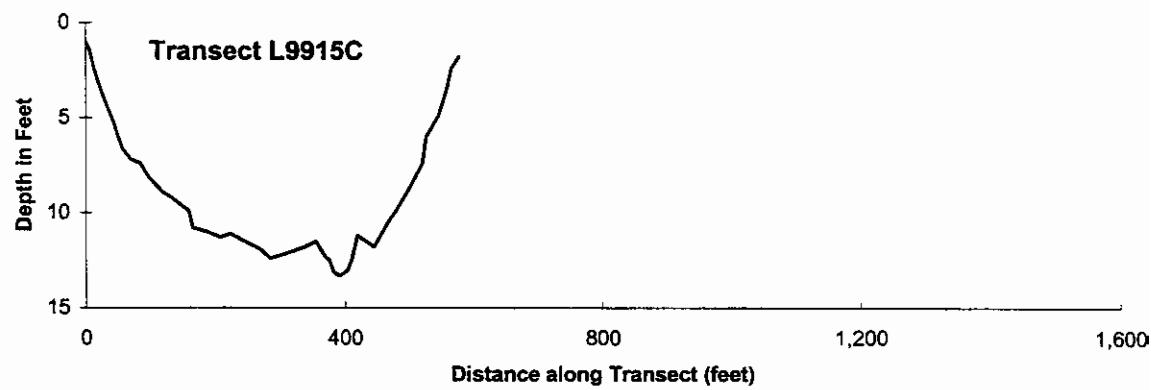
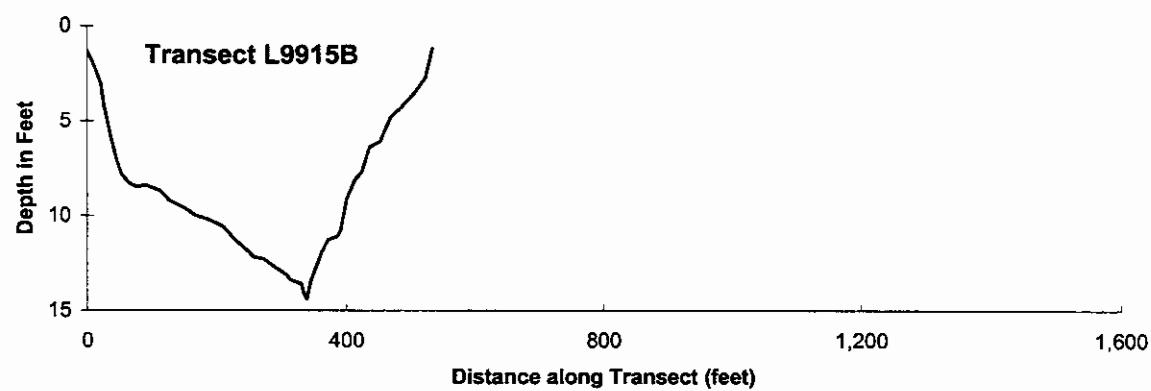
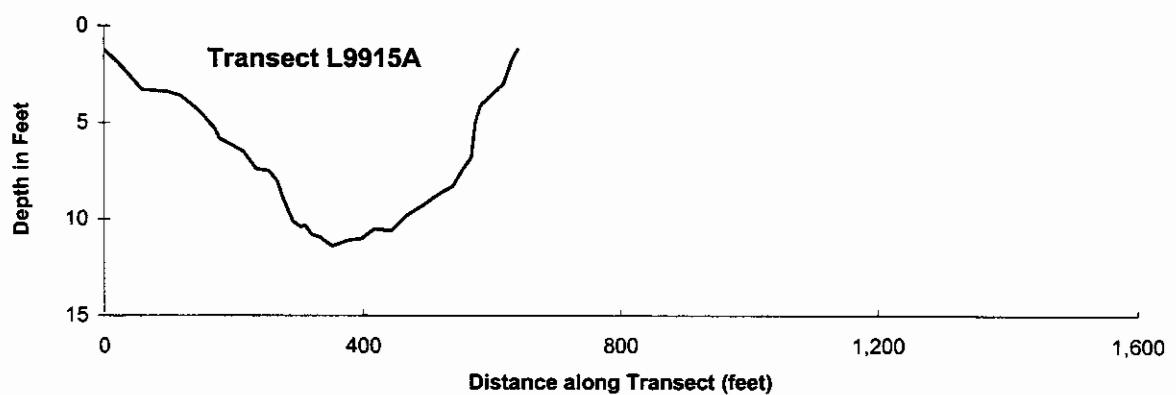
### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	20.8	9.5	25.4	3.7	78.9	124.0	J. Lobdell

### Catch Record:

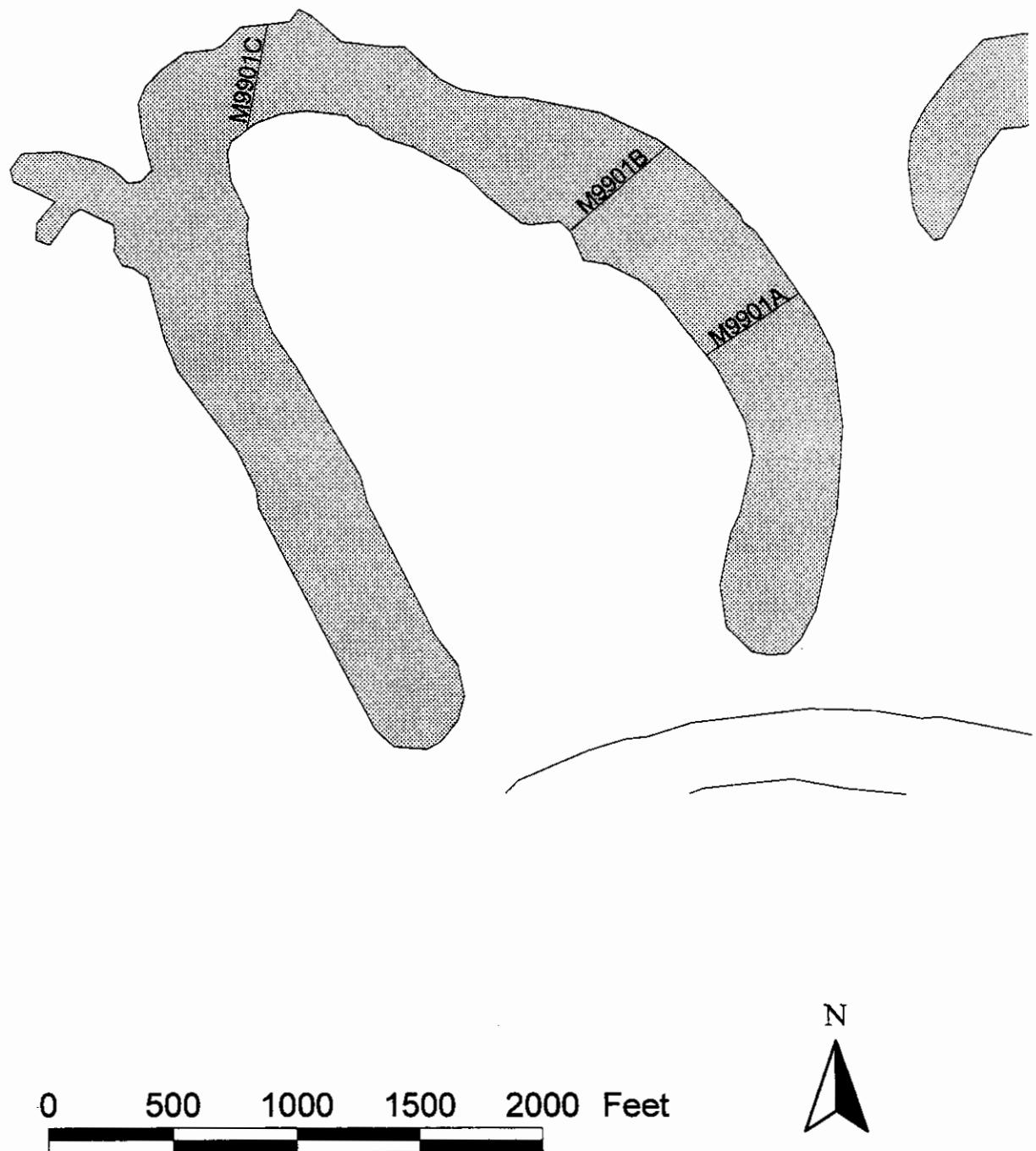
Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Jul 27 99	5.7	Least cisco	3	386-428







# M9901



## Lake M9901

### Other Names:

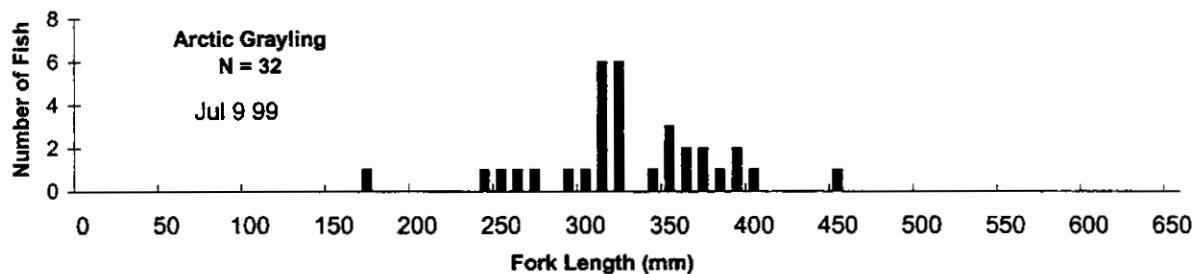
**Location:** 70°13.58'N 151°48.83'W  
**USGS Quad Sheet:** Harrison Bay A-3: T10N R1E Sect. 12  
**Habitat:** Oxbow Lake (off Judy Creek)  
**Area:** 66 acres  
**Maximum Depth:** 16.9 feet  
**Active Outlet:**  
**Spec. Conductance:** 180  $\mu\text{S}/\text{cm}$   
**pH:** 7.7  
**Calculated Volume:** 120.5 million gallons  
**Permittable Volume:** 10.6 million gallons

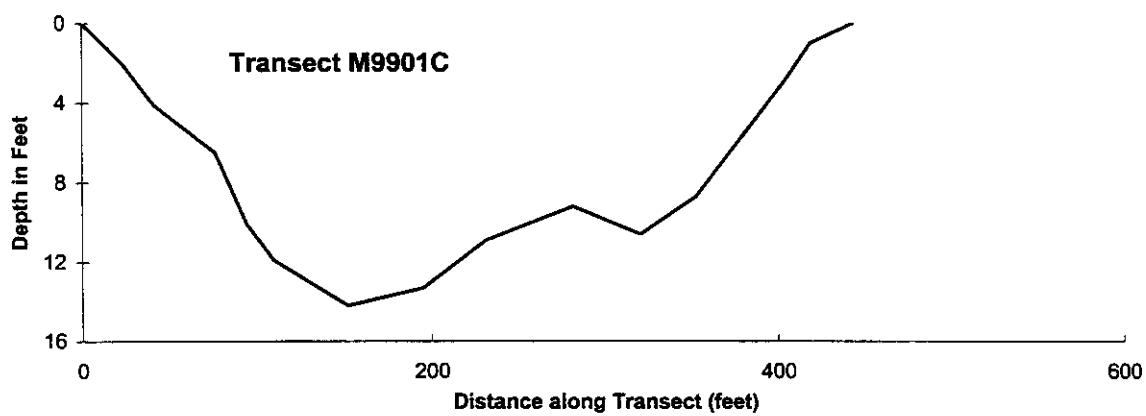
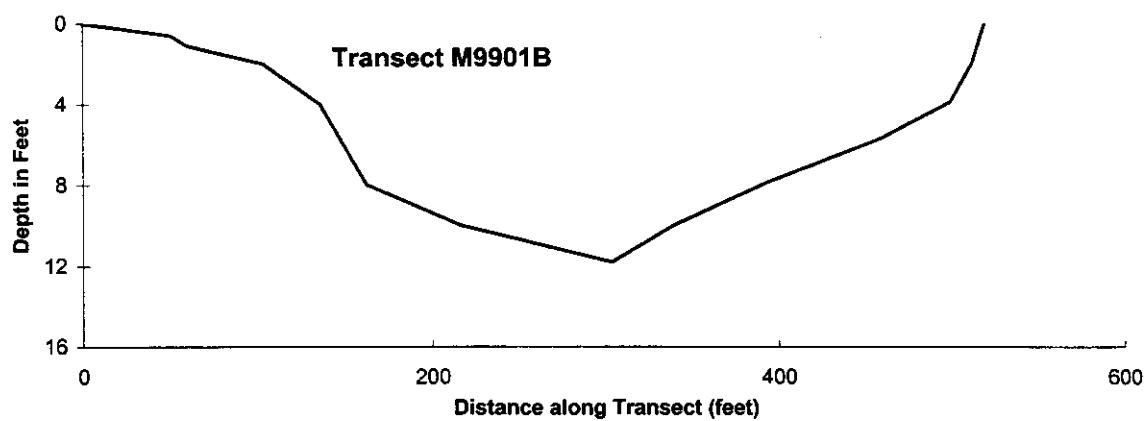
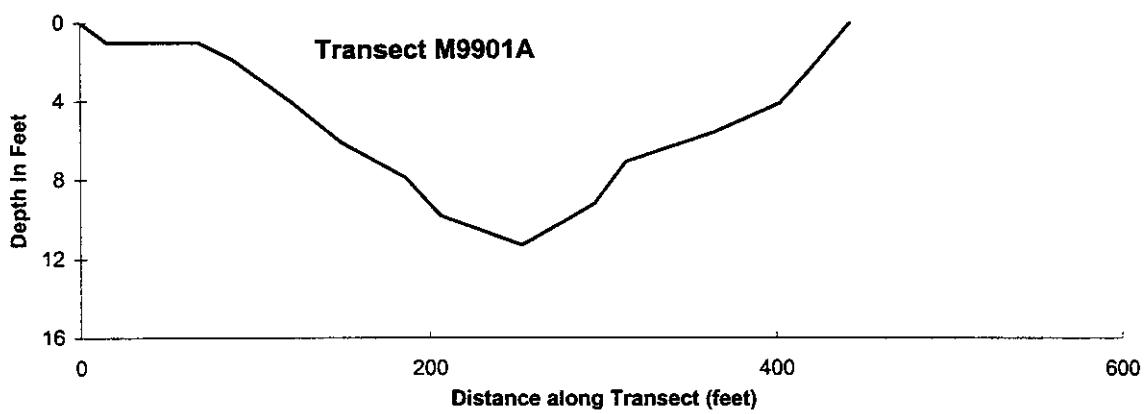
### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	23.8	4.6	24.7	3.7	79.8	110	this study

### Catch Record:

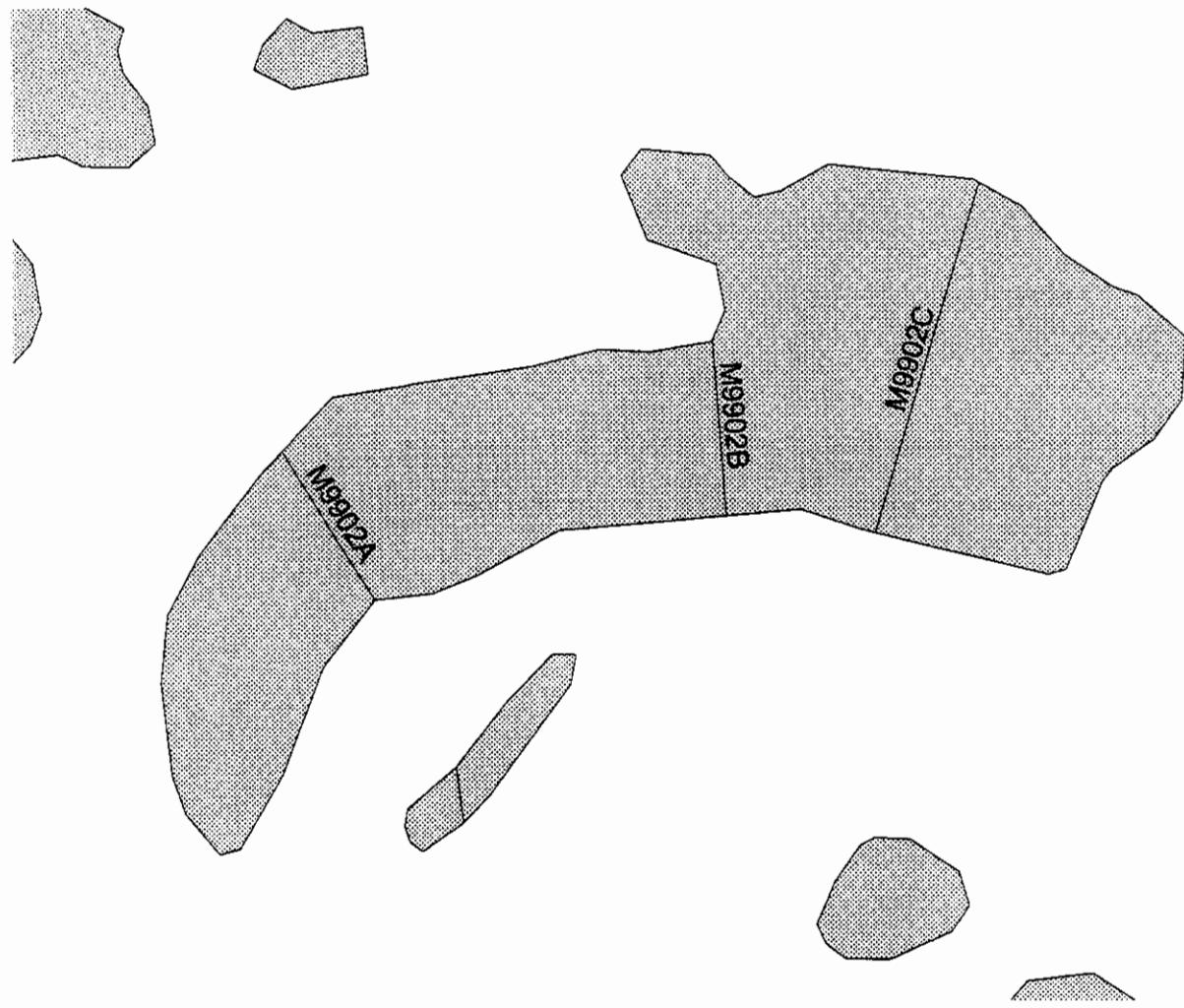
Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Jul 9 99	6.8	Arctic grayling	32	166-433







# M9902



0 500 1000 1500 Feet

**Lake M9902****Other Names:**

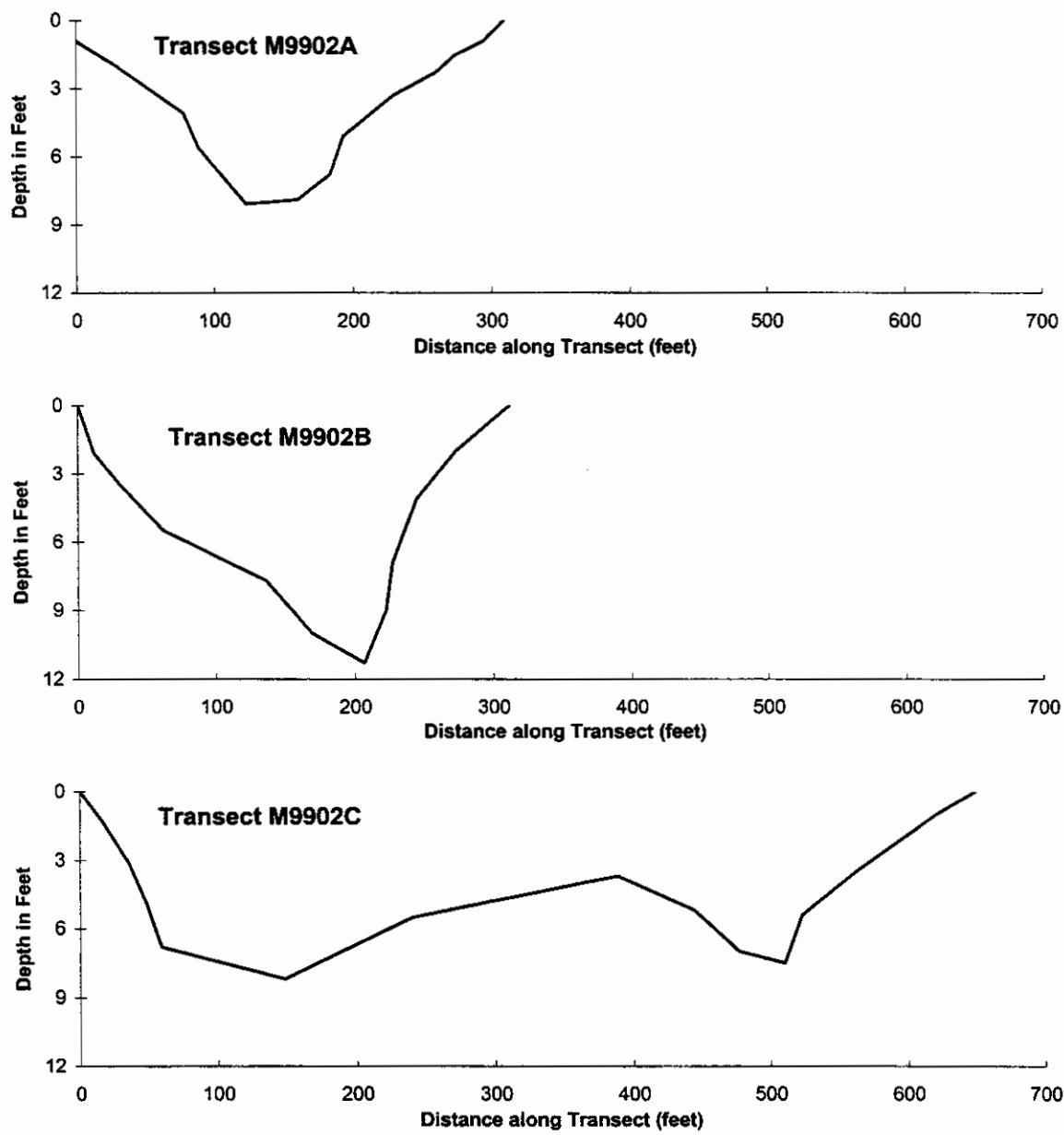
**Location:** 70°13.83'N 151°48.03'W  
**USGS Quad Sheet:** Harrison Bay A-3: T10N R1E Sect. 11  
**Habitat:** Tundra Lake  
**Area:** 20 acres  
**Maximum Depth:** 11.3 feet  
**Active Outlet:**  
**Spec. Conductance:** 294  $\mu\text{S}/\text{cm}$   
**pH:** 8.1  
**Calculated Volume:** 24.1 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	18.5	8.6	39.3	7.8	135	164	this study

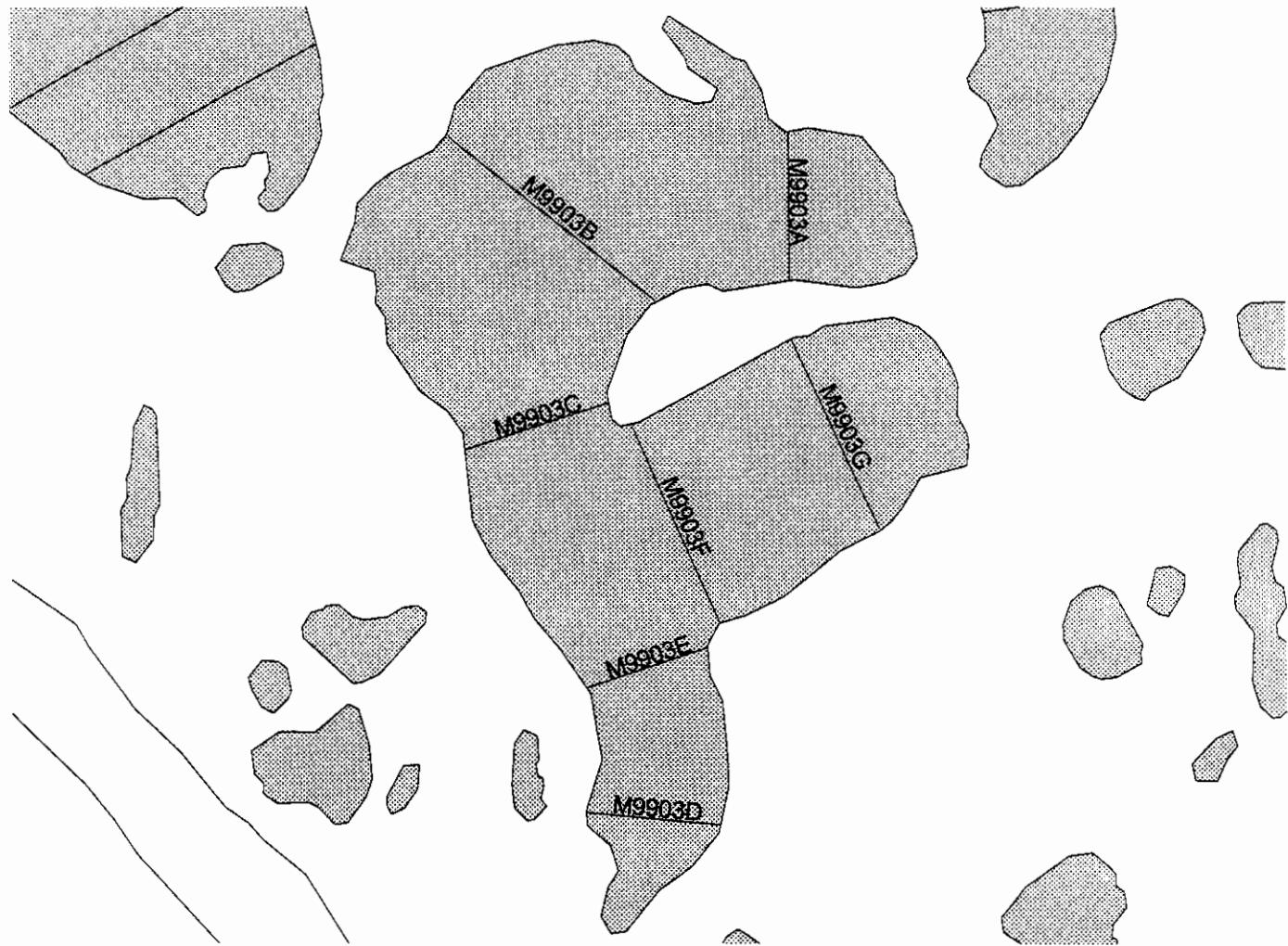
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 9 99	5.9	None	0





# M9903



0 500 1000 1500 2000 Feet



## Lake M9903

### Other Names:

Location: 70°14.40'N 151°45.26'W

USGS Quad Sheet: Harrison Bay A-3: T10N R1E Sect. 12

Habitat: Oxbow lake ? (off Judy Creek)

Area: 70 acres

Maximum Depth: 22.1 feet

### Active Outlet:

Spec. Conductance 87  $\mu$ S/cm

pH: 8.1

Calculated Volume: 166.8 million gallons

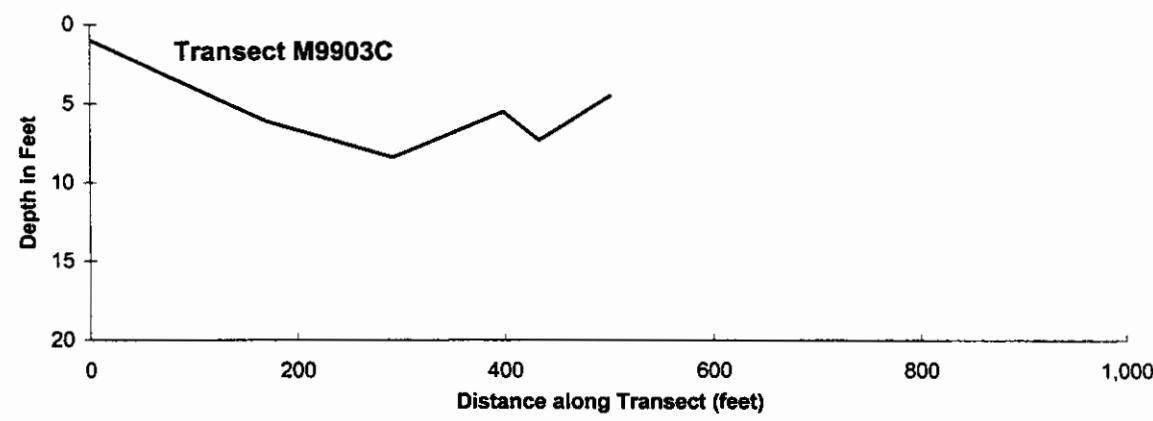
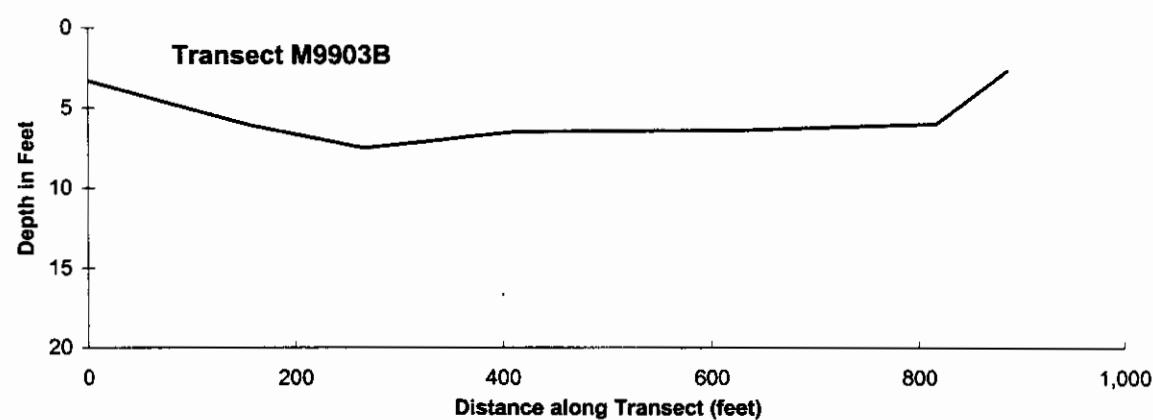
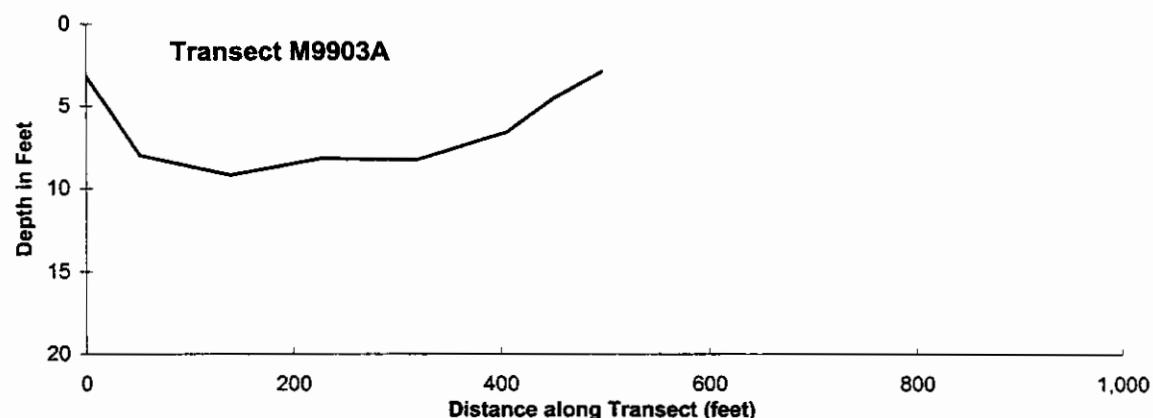
Permittable Volume: No fish concern

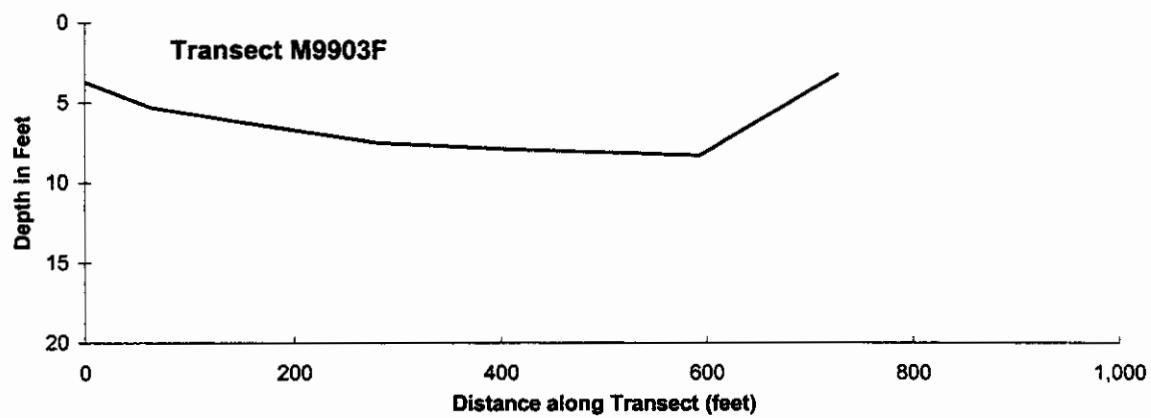
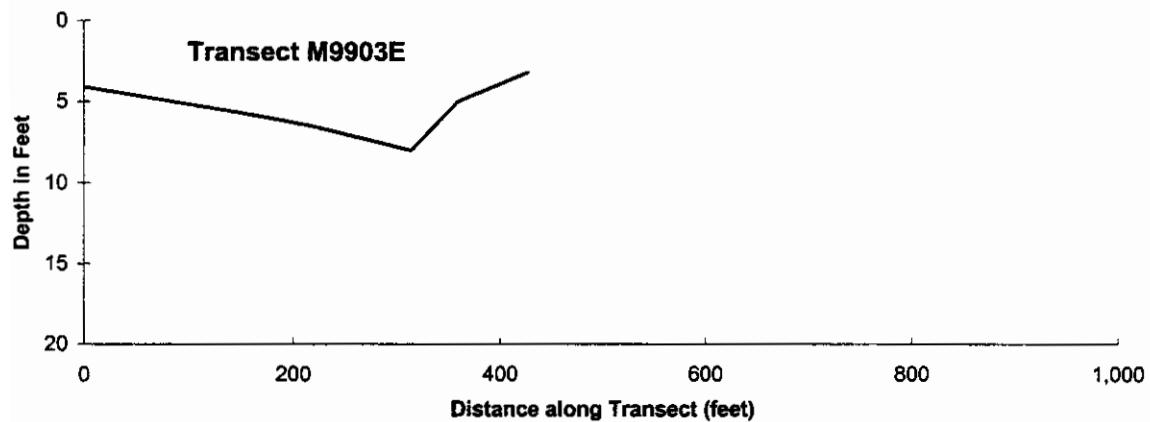
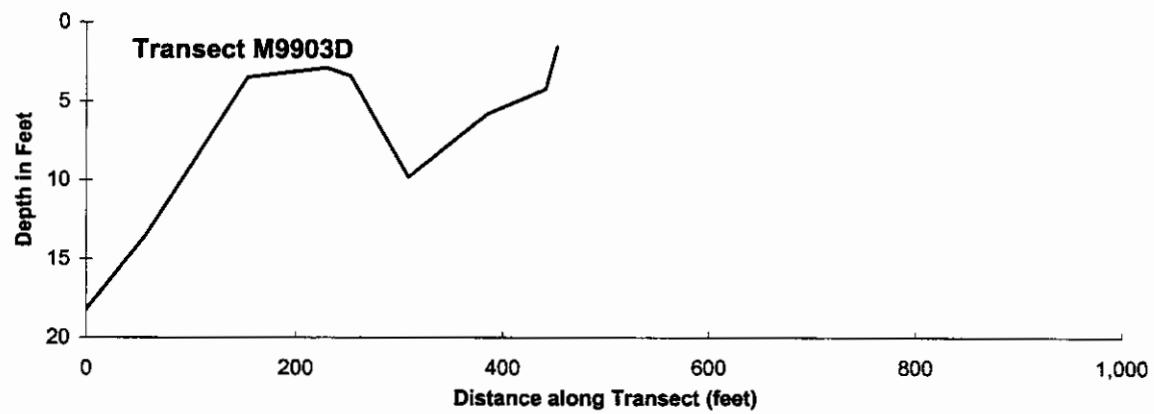
### Water Quality:

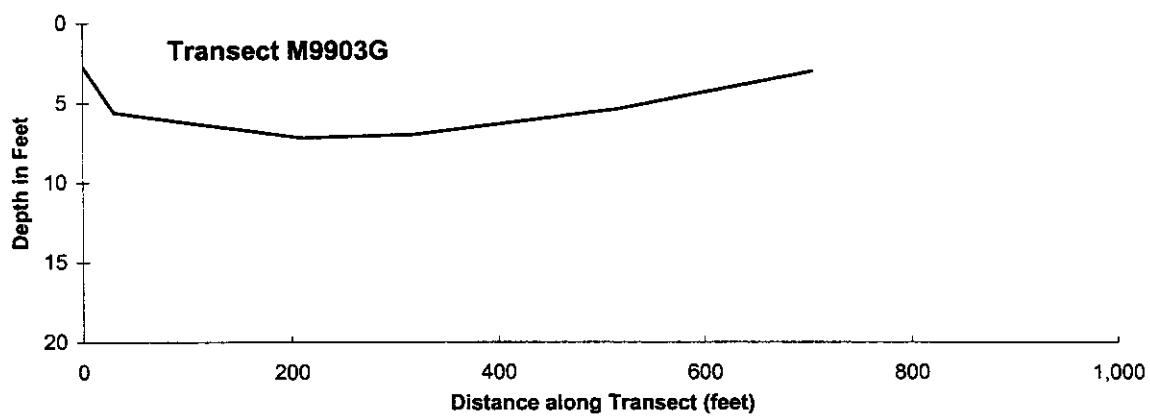
Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	7.91	2.8	9.69	1.9	33.2	55	this study

### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 10 99	3.2	None	0
	Jul 16 99	4.6	None	0

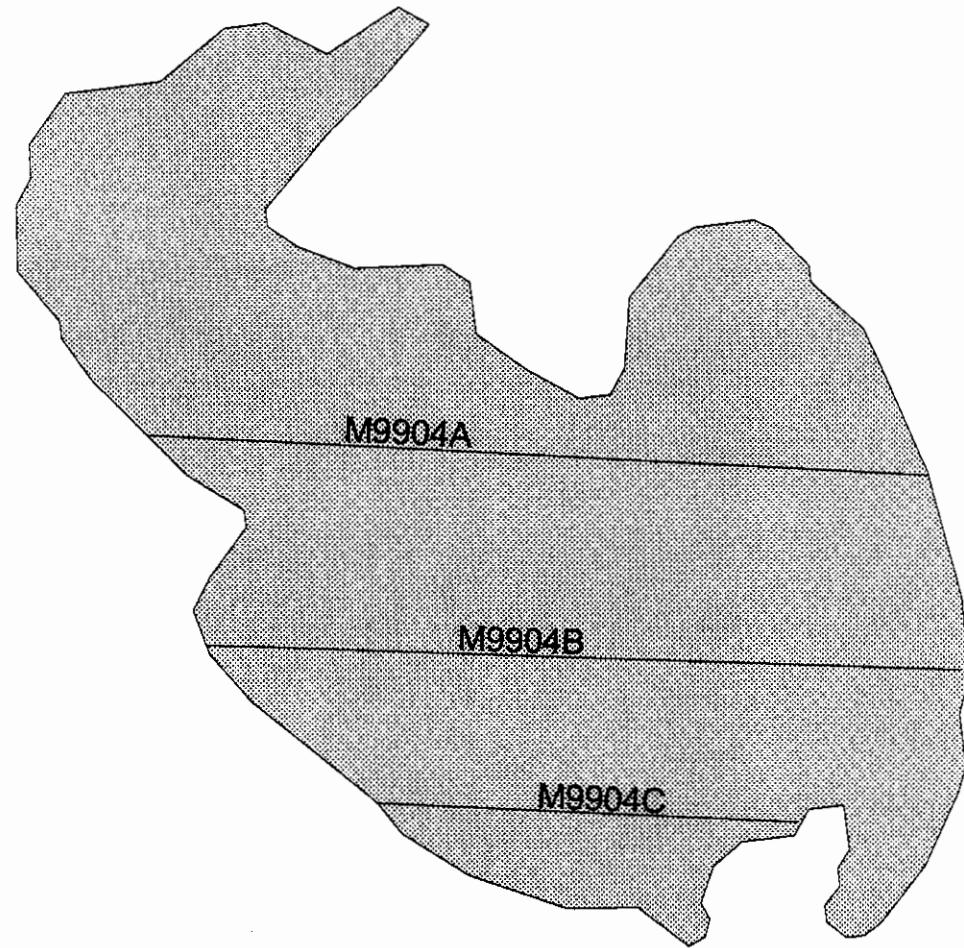








# M9904



0      300      600      900      1200 Feet

## Lake M9904

### Other Names:

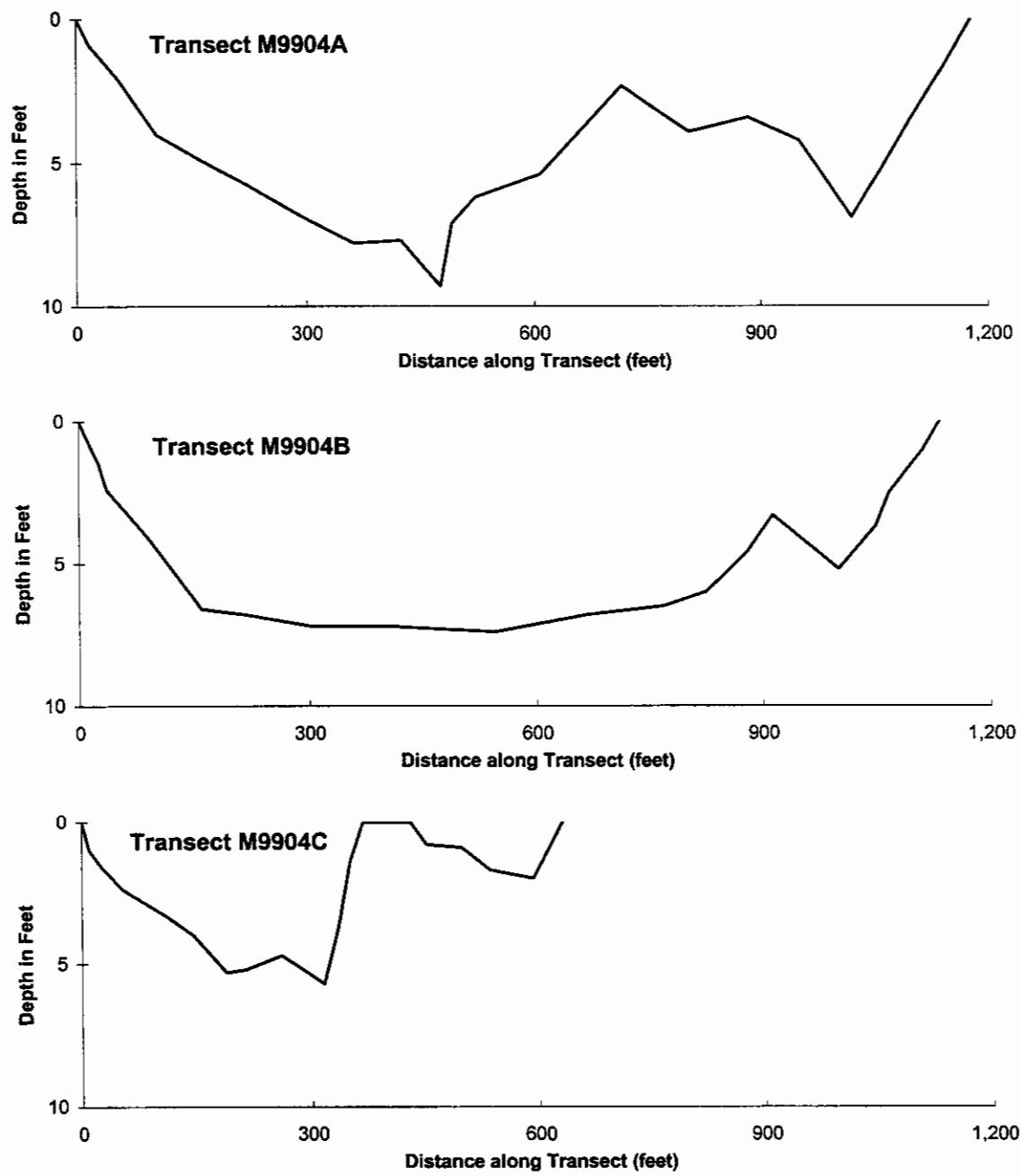
**Location:** 70°14.64'N 151°46.00'W  
**USGS Quad Sheet:** Harrison Bay A-3: T10N R1E Sect. 1  
**Habitat:** Perched lake (frequent flooding?)  
**Area:** 25 acres  
**Maximum Depth:** 9.3 feet  
**Active Outlet:**  
**Spec. Conductance:** 210  $\mu\text{S}/\text{cm}$   
**pH:** 8.0  
**Calculated Volume:** 25.2 million gallons  
**Permittable Volume:** 0.9 million gallons

### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	8.34	3.4	32	4.4	98.6	126	this study

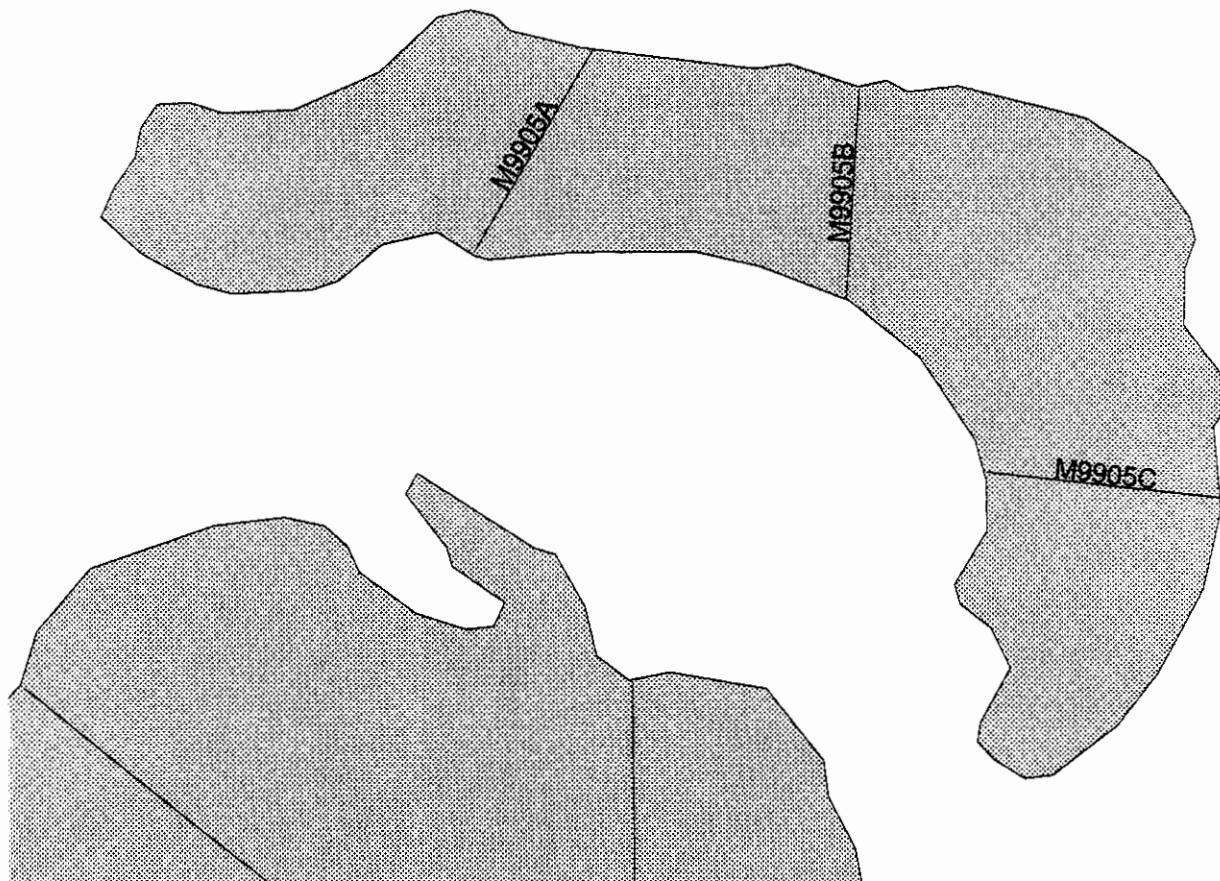
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 10 99	3.4	None	0





# M9905



0 200 400 600 800 1000 Feet



## Lake M9905

### Other Names:

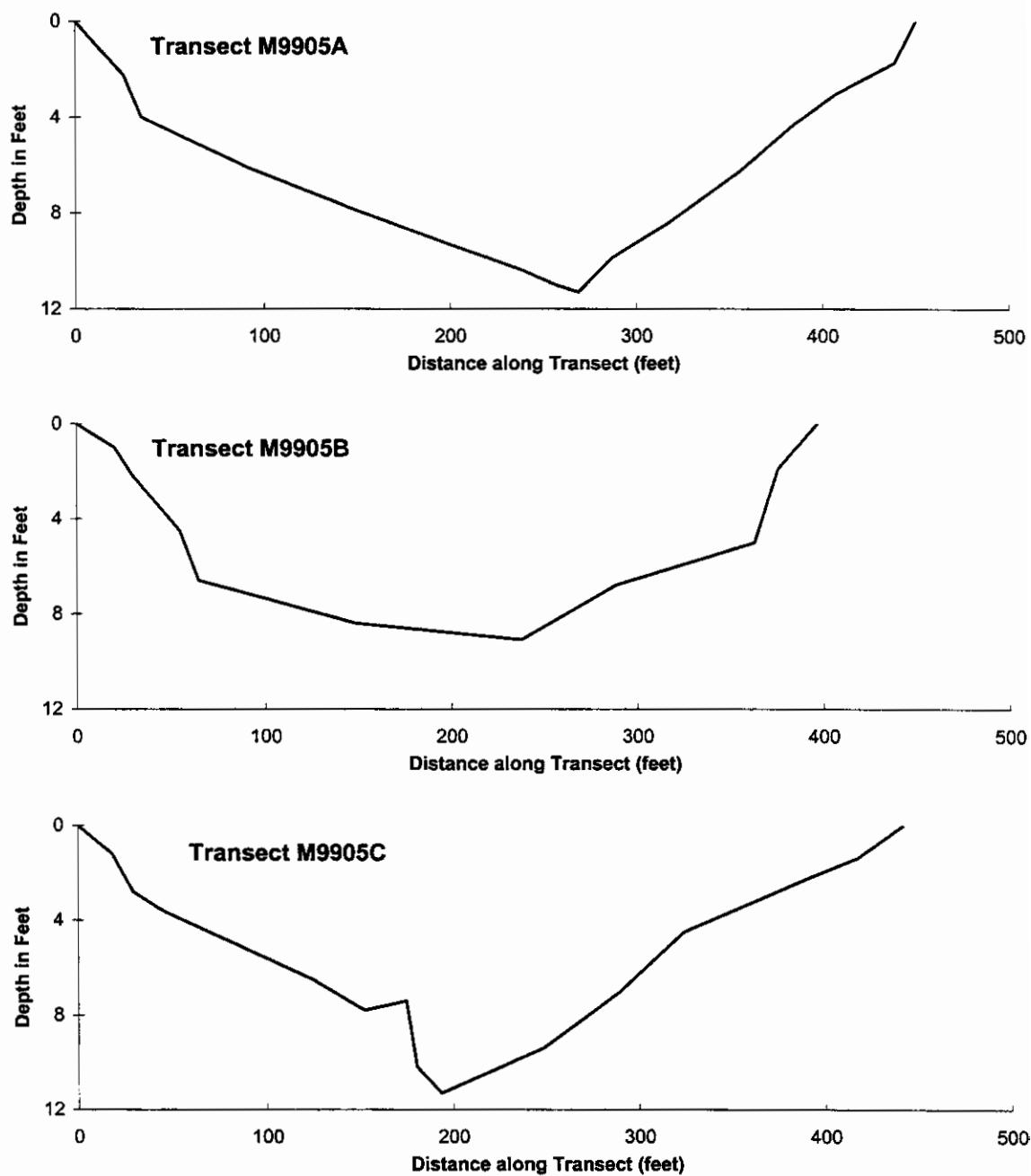
Location: 70°14.74'N 151°44.93'W  
USGS Quad Sheet: Harrison Bay A-3: T10N R2E Sect. 6  
Habitat: Tundra lake?  
Area: 25 acres  
Maximum Depth: 11.3 feet  
Active Outlet:  
Spec. Conductance: 85  $\mu\text{S}/\text{cm}$   
pH: 8.0  
Calculated Volume: 29.9 million gallons  
Permittable Volume: No fish concern

### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	7.35	2.6	9.92	1.9	33	61	this study

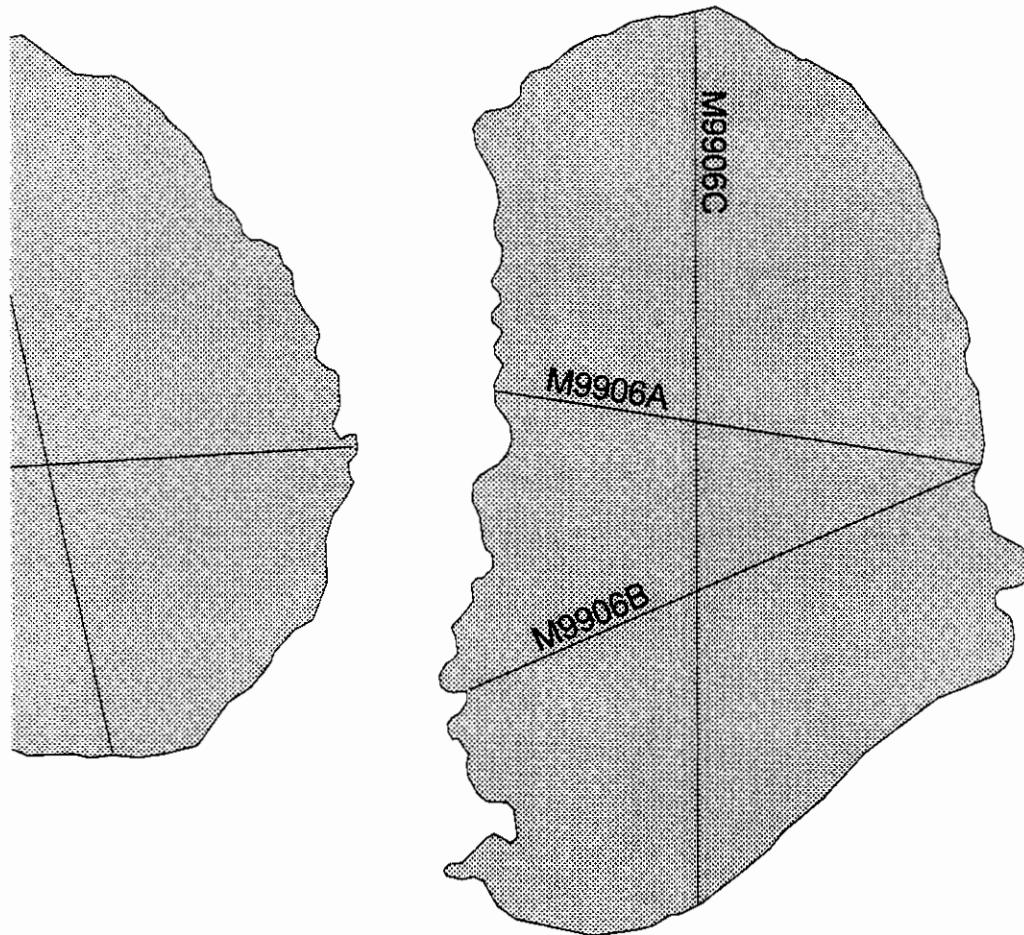
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 10 99	3.9	None	0

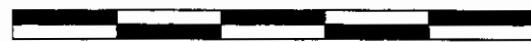




# M9906



0 500 1000 1500 2000 2500 Feet



**Lake M9906****Other Names:**

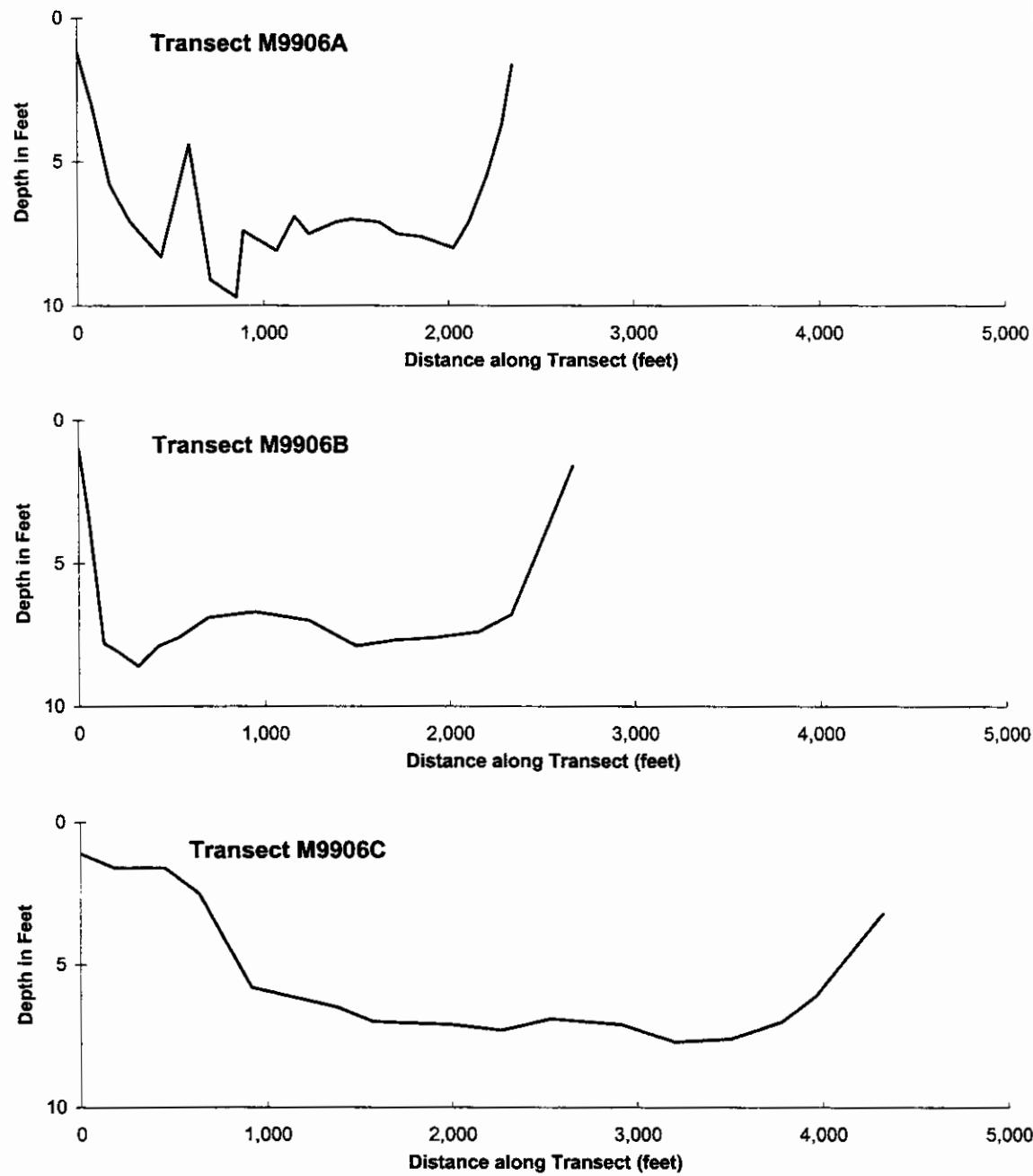
**Location:** 70°14.24'N 151°51.40'W  
**USGS Quad Sheet:** Harrison Bay A-4: T10N R1E Sect. 10  
**Habitat:** Tundra lake  
**Area:** 203 acres  
**Maximum Depth:** 9.7 feet  
**Active Outlet:**  
**Spec. Conductance:** 200  $\mu\text{S}/\text{cm}$   
**pH:** 8.3  
**Calculated Volume:** 211.6 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	13.8	5	26.9	4	85.6	112	this study

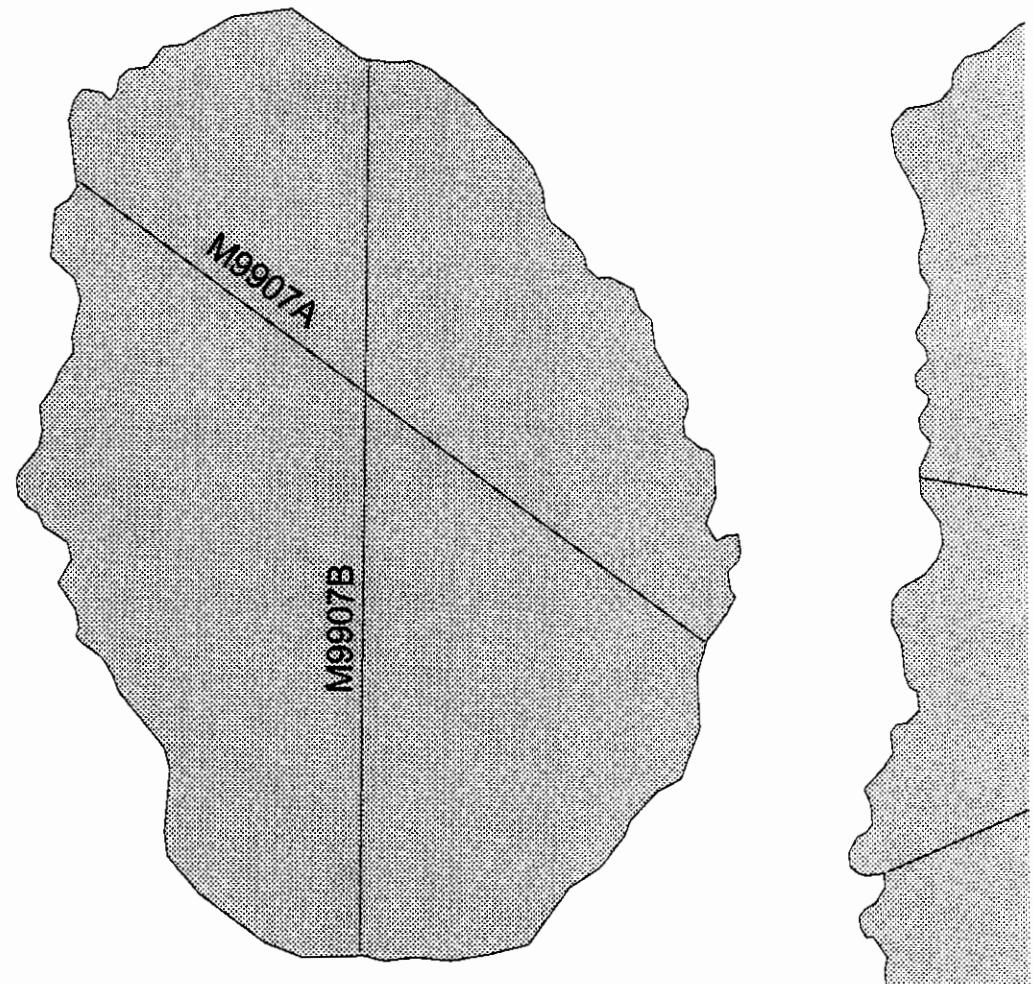
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gillnet	Jul 15 99	7.6	None	0





**M9907**



0    500    1000    1500    2000    Feet

## Lake M9907

### Other Names:

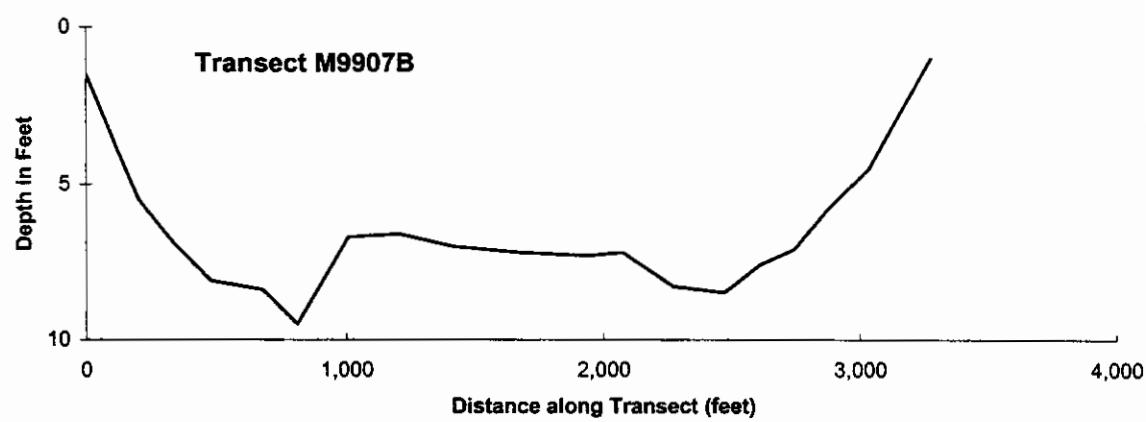
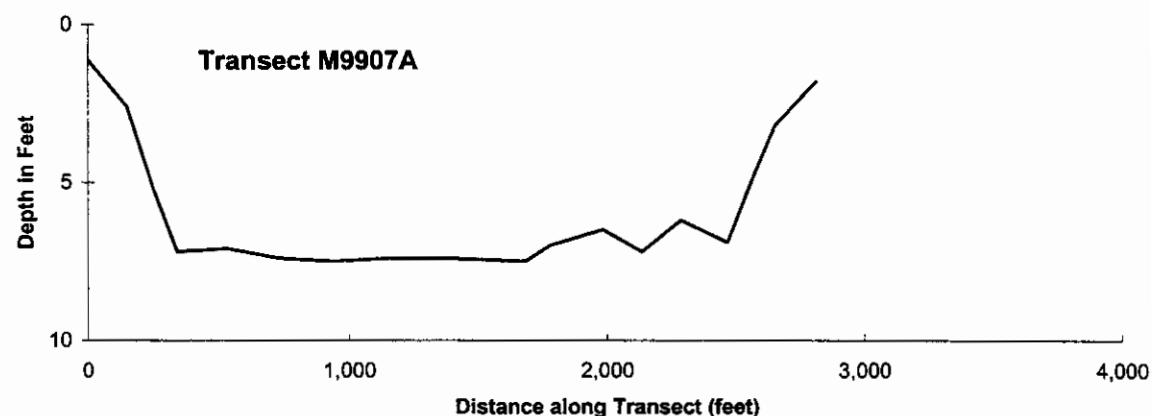
Location: 70°14.47'N 151°52.65'W  
USGS Quad Sheet: Harrison Bay A-4: T10N R1E Sect. 9-10  
Habitat: Tundra lake  
Area: 148 acres  
Maximum Depth: 9.5 feet  
Active Outlet:  
Spec. Conductance: 199  $\mu$ S/cm  
pH: 8.3  
Calculated Volume: 150.9 million gallons  
Permittable Volume: No fish concern

### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	13.3	5.4	25.4	4.3	84	116	this study

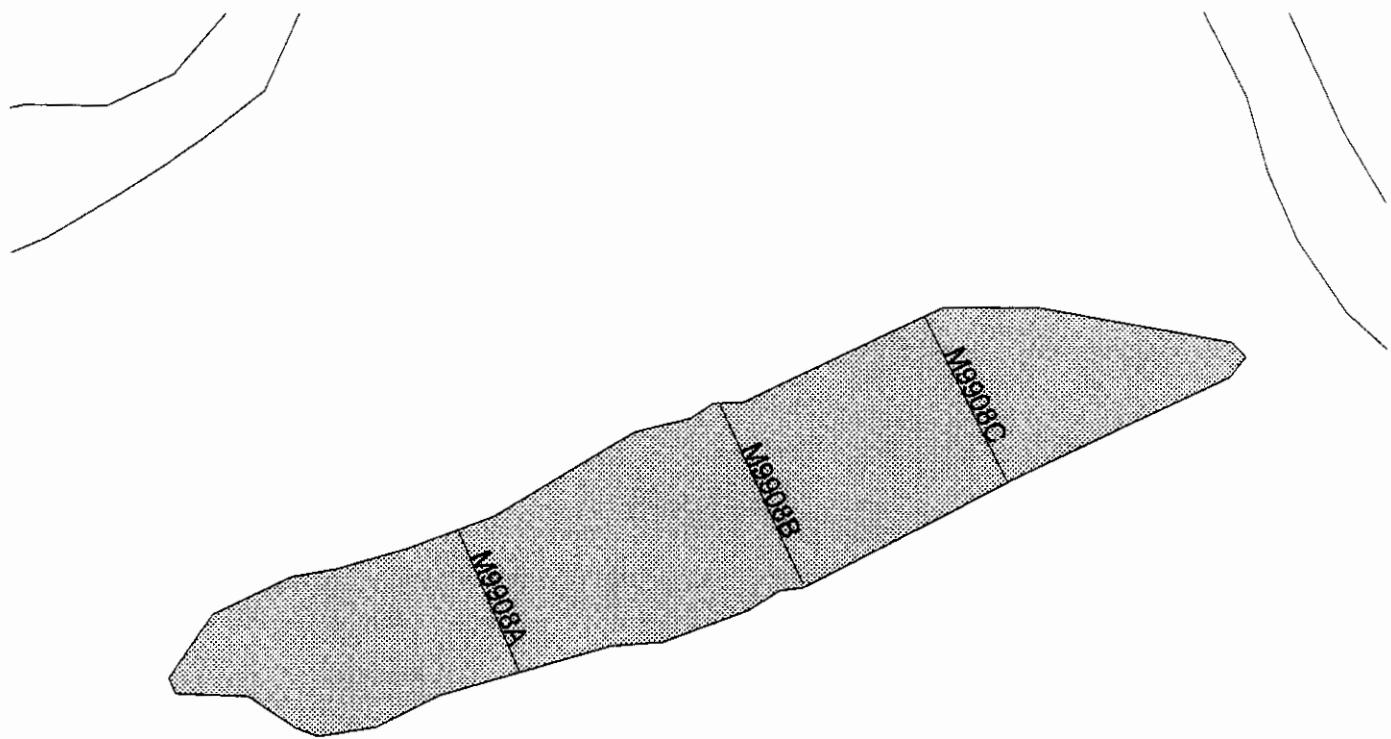
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 15 99	8.2	None	0





**M9908**



0    300    600    900    1200    1500    Feet

**Lake M9908****Other Names:**

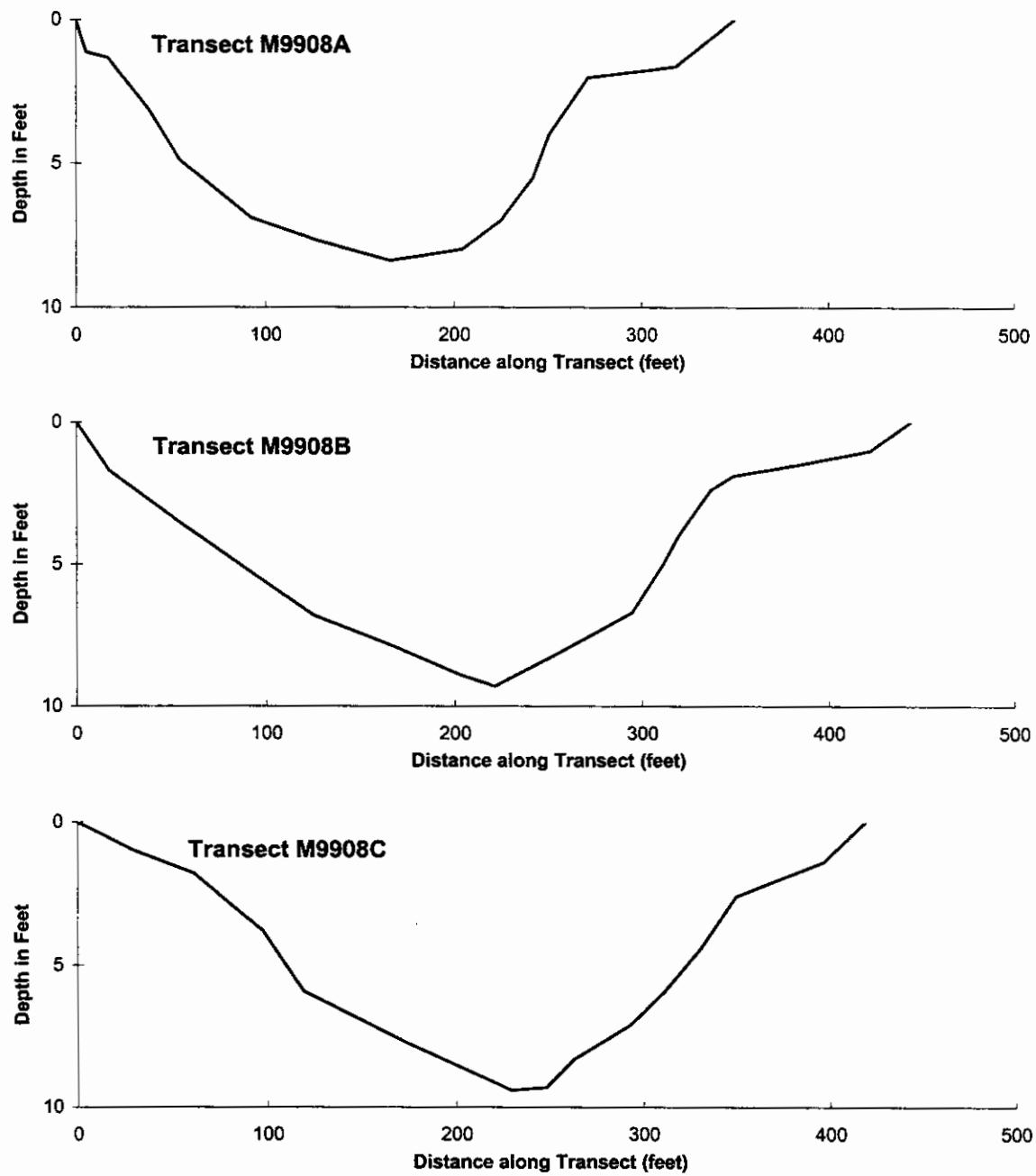
**Location:** 70°16.42'N 151°38.73'W  
**USGS Quad Sheet:** Harrison Bay B-3: T11N R2E Sect. 28  
**Habitat:** Perched lake (frequent flooding?)  
**Area:** 18 acres  
**Maximum Depth:** 9.4 feet  
**Active Outlet:**  
**Spec. Conductance:** 318  $\mu\text{S}/\text{cm}$   
**pH:** 8.4  
**Calculated Volume:** 18.1 million gallons  
**Permittable Volume:** 0.7 million gallons

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	28.6	9	40.9	7.6	136	188	this study

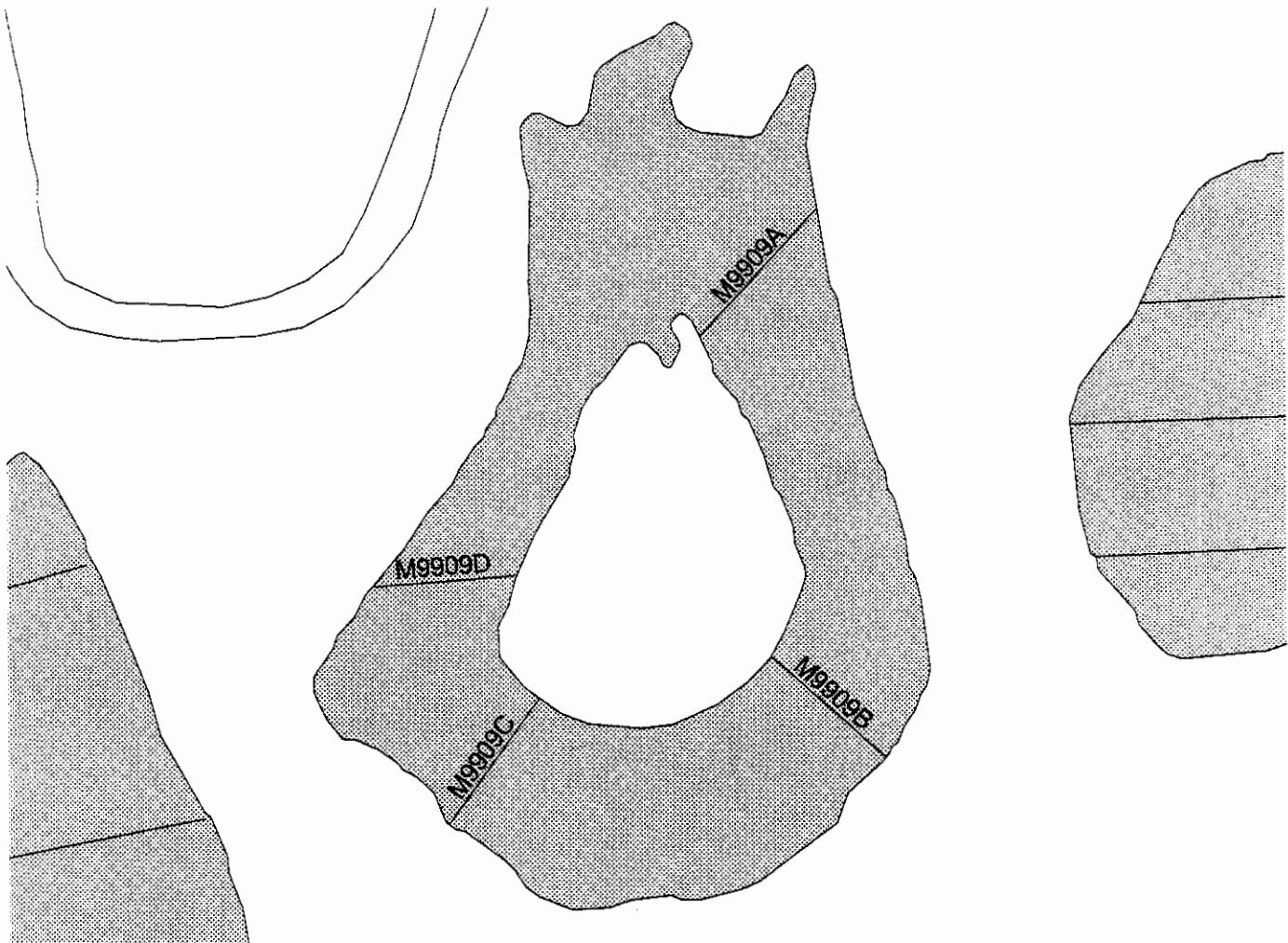
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 11 99	4.9	None	0





# M9909



0 500 1000 1500 2000 2500 3000 Feet

## Lake M9909

### Other Names:

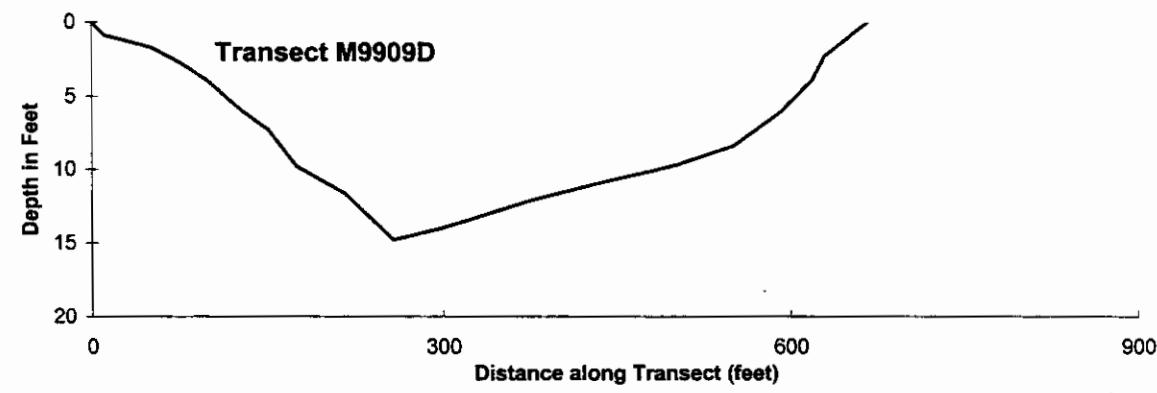
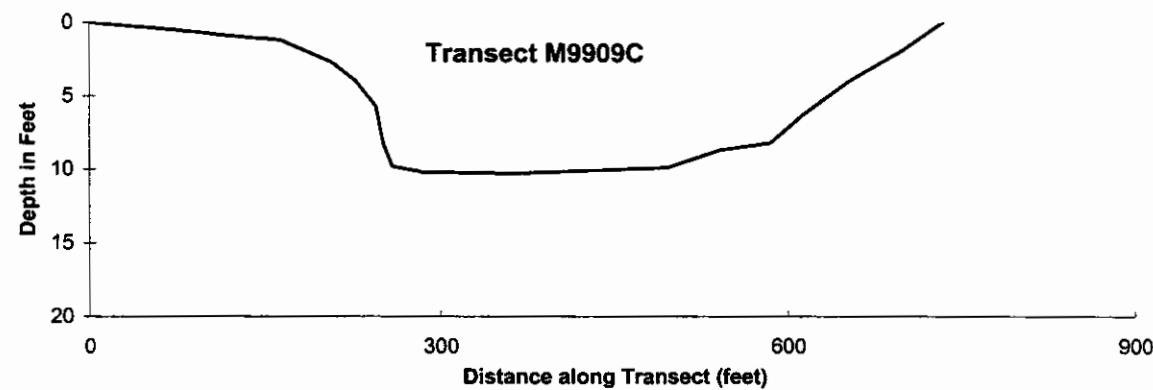
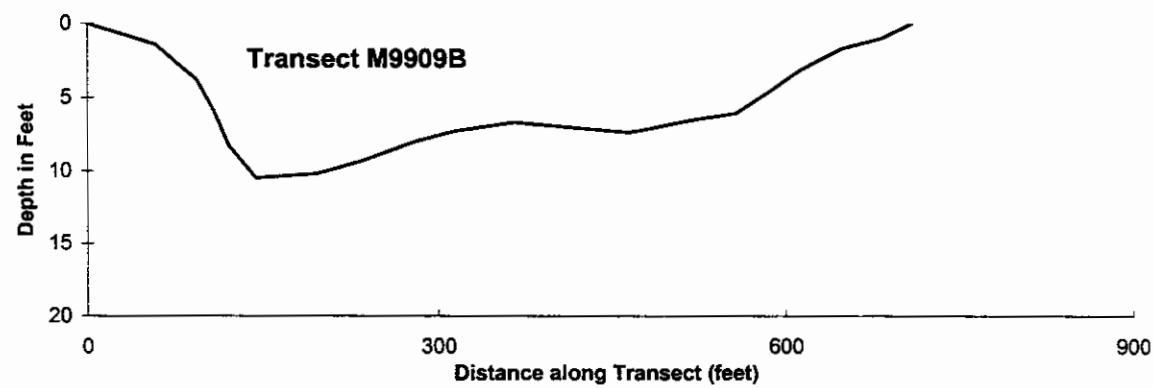
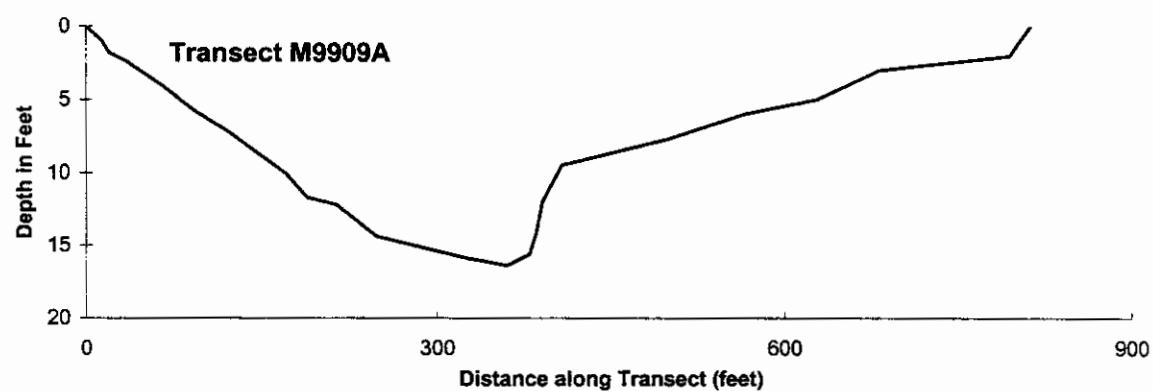
**Location:** 70°15.80'N 151°39.67'W  
**USGS Quad Sheet:** Harrison Bay B-3: T11N R2E Sect. 33  
**Habitat:** Oxbow lake (Fish Creek)  
**Area:** 118 acres  
**Maximum Depth:** 16.4 feet  
**Active Outlet:**  
**Spec. Conductance:** 173  $\mu\text{S}/\text{cm}$   
**pH:** 8.1  
**Calculated Volume:** 207.3 million gallons  
**Permittable Volume:** 17.8 million gallons

### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	20.5	5	18.8	3.8	65.1	98	this study

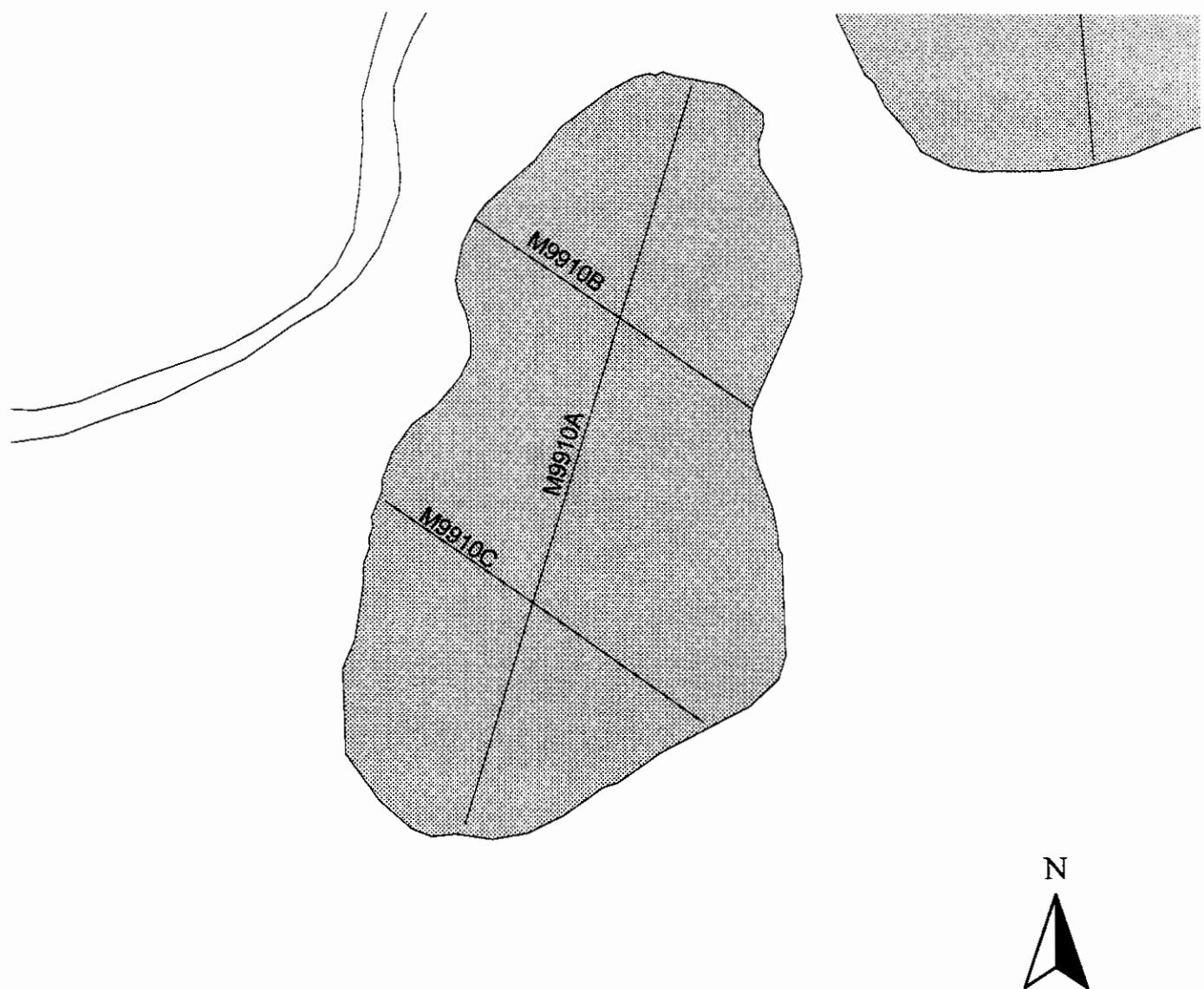
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Jul 11 99	5.0	Broad whitefish Least cisco	2 6	570, 655 148-297





# M9910



0 500 1000 1500 2000 2500 3000 Feet

## Lake M9910

### Other Names:

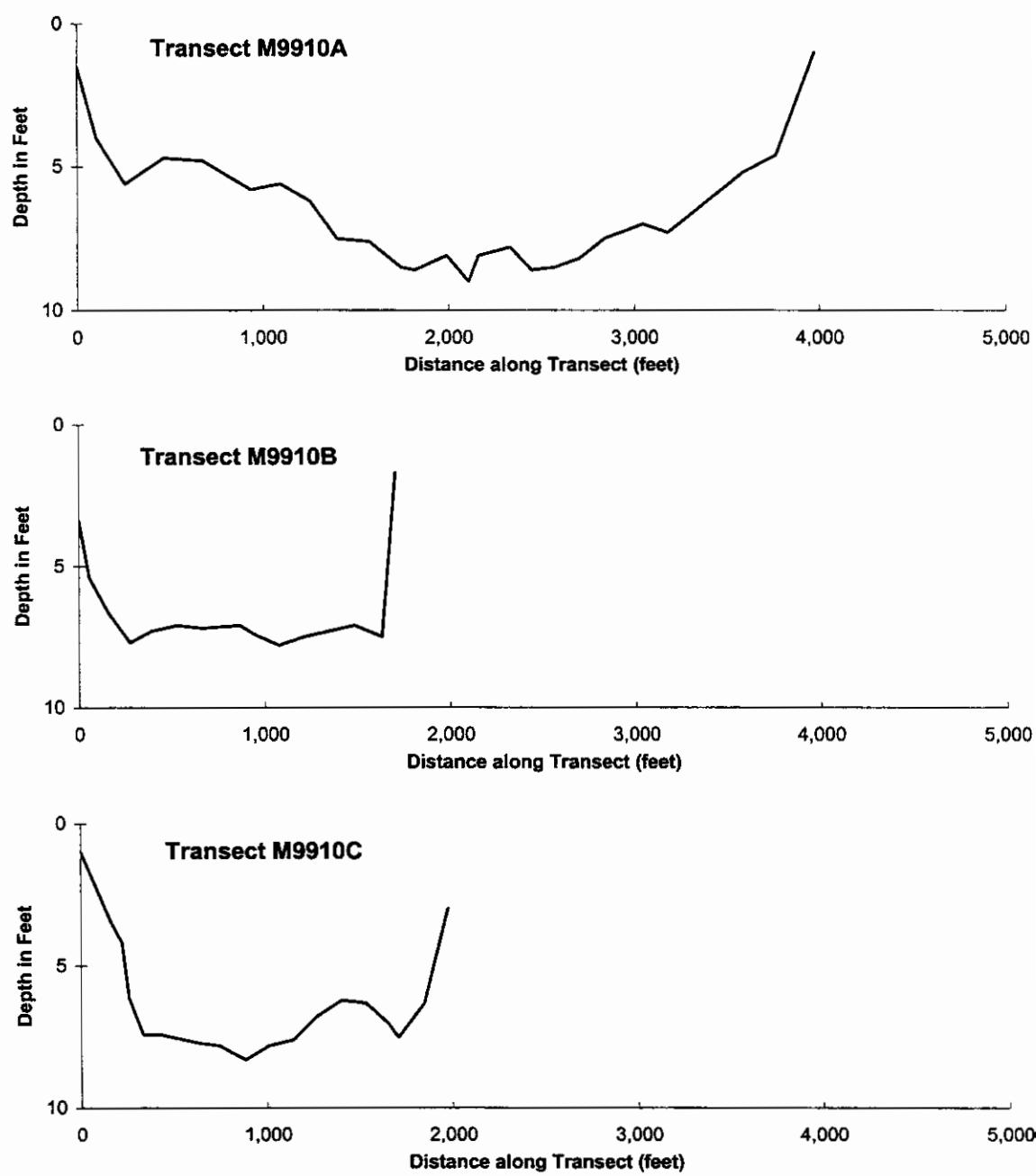
Location: 70°15.23'N 151°42.95'W  
USGS Quad Sheet: Harrison Bay B-3: T10N R2E Sect. 6  
Habitat: Perched lake (frequent flooding?)  
Area: 147 acres  
Maximum Depth: 9 feet  
Active Outlet:  
Spec. Conductance: 127 µS/cm  
pH: 8.1  
Calculated Volume: 141.8 million gallons  
Permittable Volume: 4.7 million gallons

### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	8.73	3.1	17.2	3	54.9	78	this study

### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Jul 11 99	1.2	Arctic grayling	4	279-289





# M9911



0 500 1000 1500 2000 2500 3000 Feet

## Lake M9911

### Other Names:

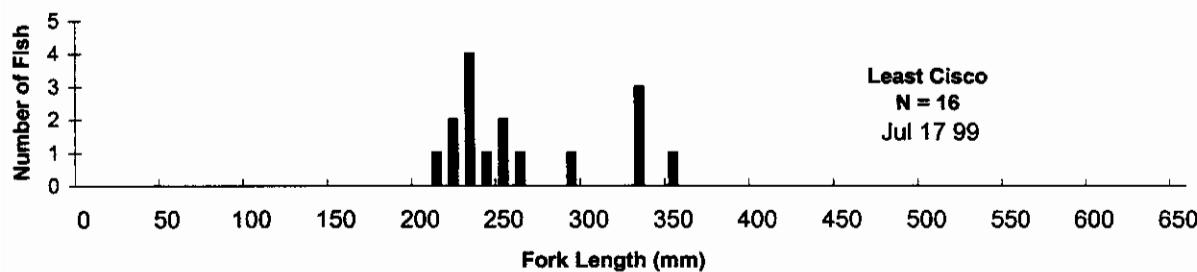
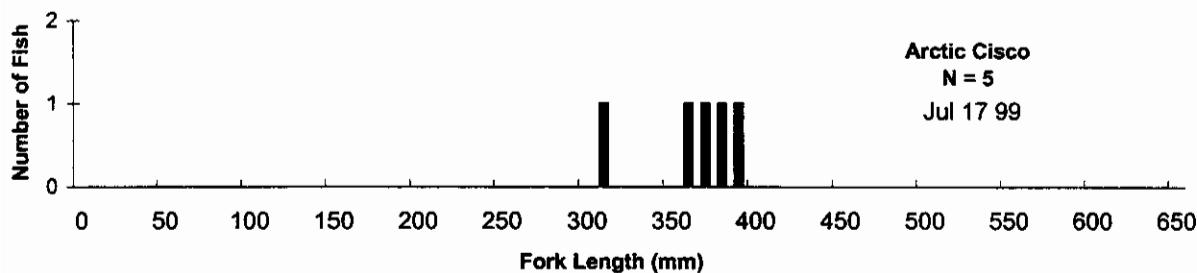
**Location:** 70°15.65'N 150°40.30'W  
**USGS Quad Sheet:** Harrison Bay B-3: T11N R2E Sect. 32  
**Habitat:** Perched lake (infrequent flooding)  
**Area:** 144 acres  
**Maximum Depth:** 15.3 feet  
**Active Outlet:**  
**Spec. Conductance:** 146  $\mu\text{S}/\text{cm}$   
**pH:** 8.0  
**Calculated Volume:** 237.2 million gallons  
**Permittable Volume:** 19.3 million gallons

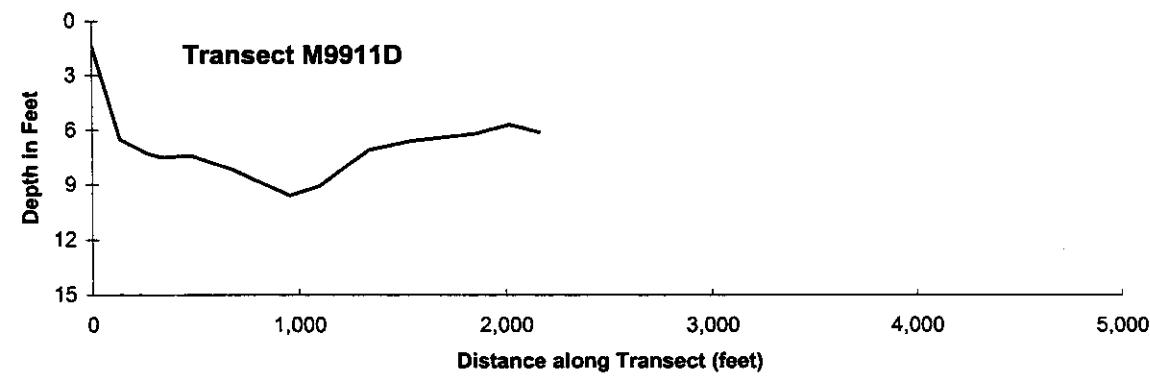
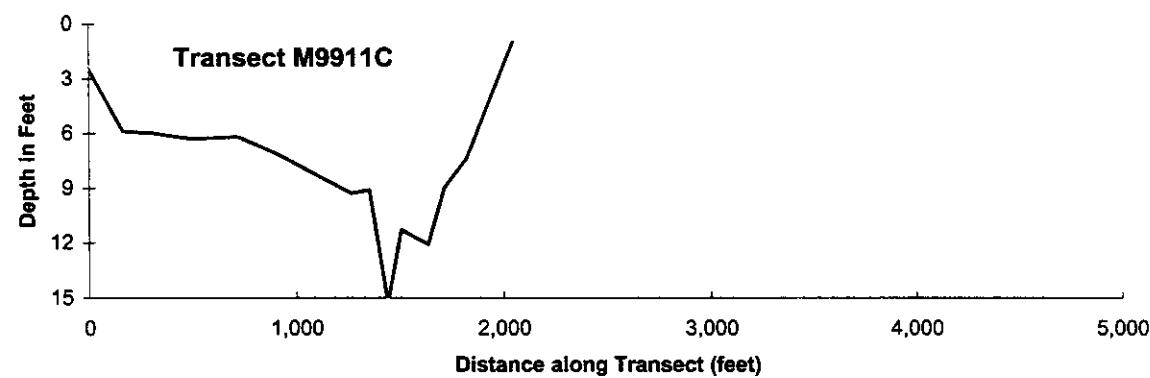
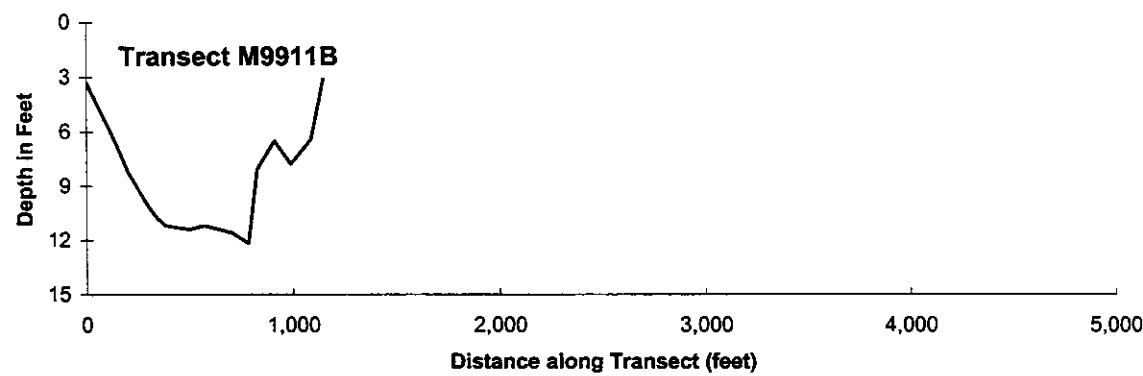
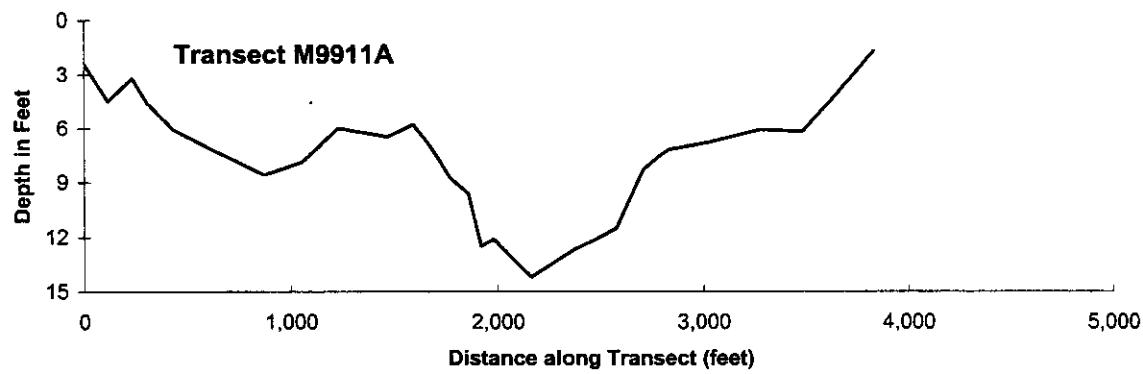
### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	9.41	3.6	21.5	2.9	65.7	84	this study

### Catch Record:

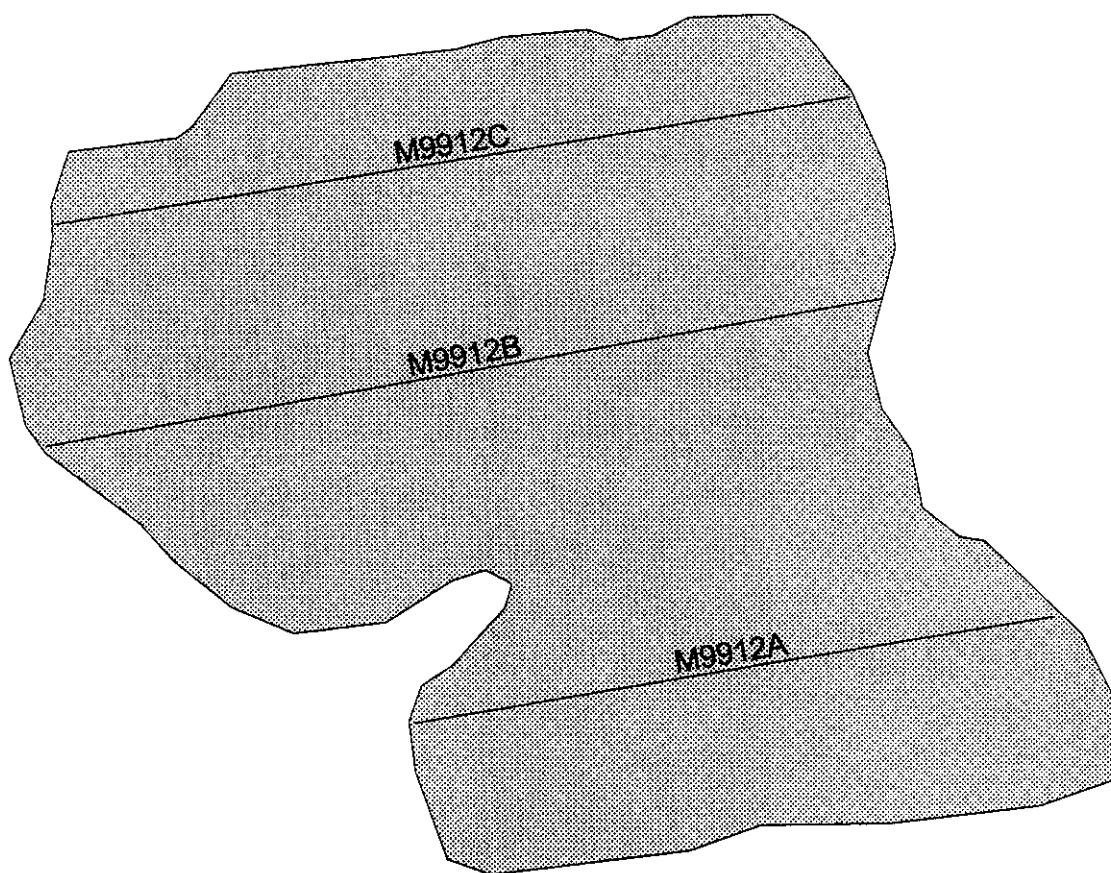
Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Jul 17 99	6.2	Broad whitefish Least cisco	14 2	114-319 205, 319







# M9912



0      300      600      900      1200 Feet

**Lake M9912****Other Names:**

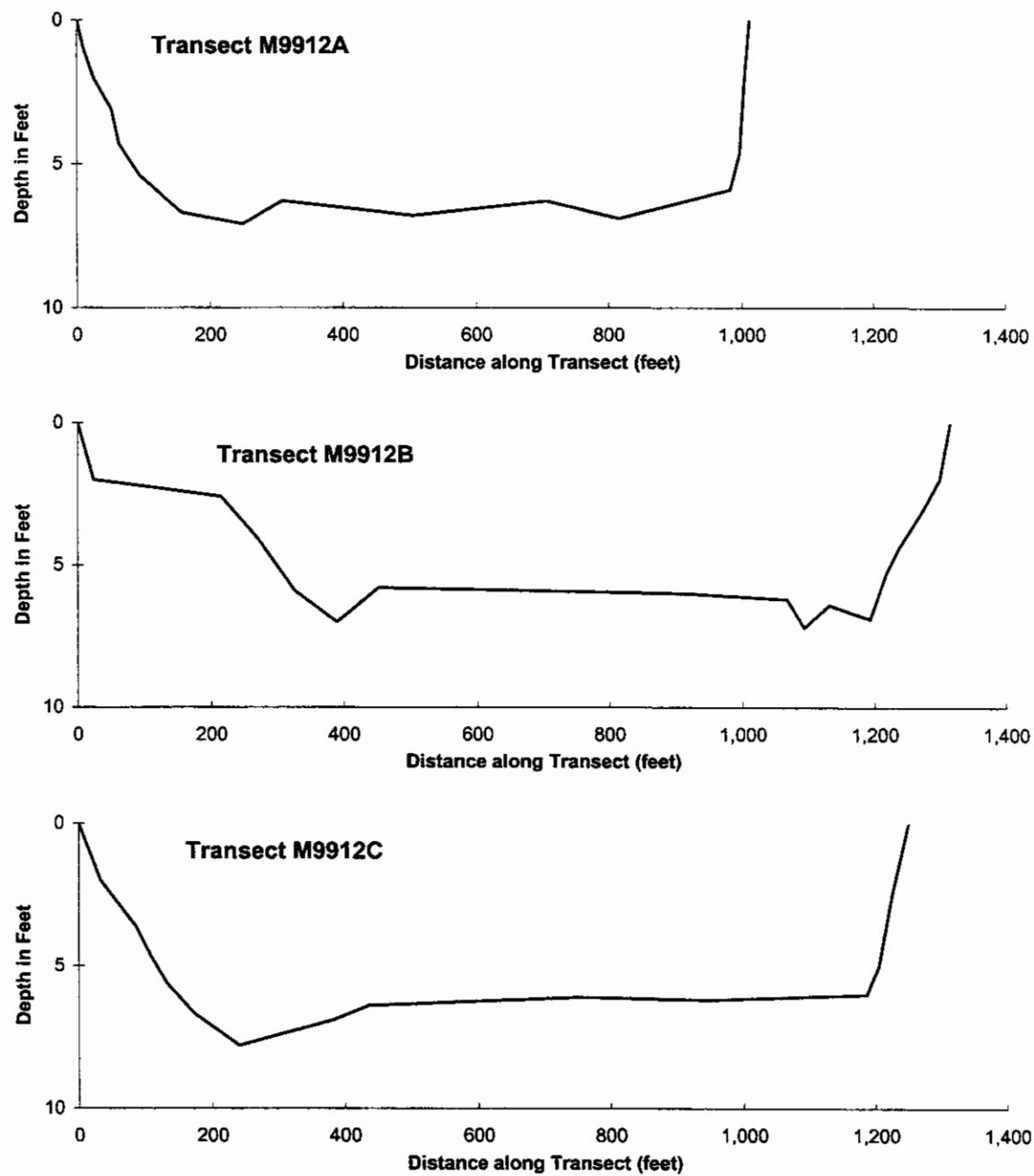
**Location:** 70°15.13'N 151°33.38'W  
**USGS Quad Sheet:** Harrison Bay B-3: T10N R2E Sect. 2  
**Habitat:** Tundra lake  
**Area:** 33 acres  
**Maximum Depth:** 7.8 feet  
**Active Outlet:**  
**Spec. Conductance:** 88  $\mu\text{S}/\text{cm}$   
**pH:** 7.4  
**Calculated Volume:** 27.6 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	13.9	4.4	8.63	2.2	31.4	59	this study

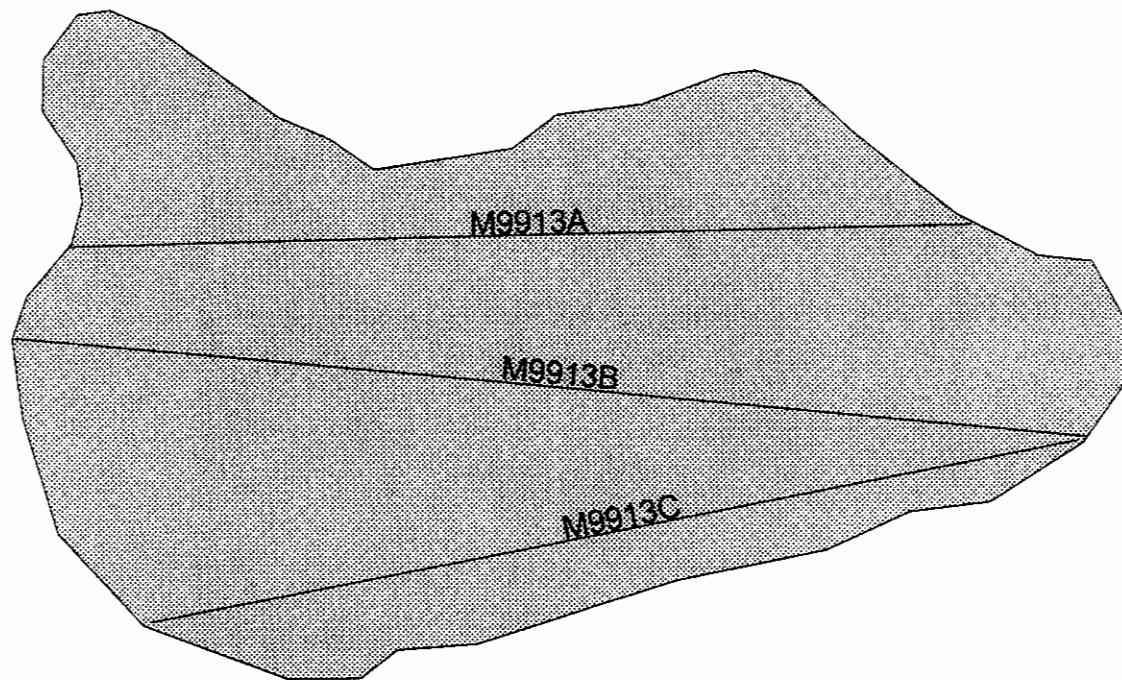
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 12 99	5.5	None	0





# M9913



N



0 500 1000 Feet

**Lake M9913****Other Names:**

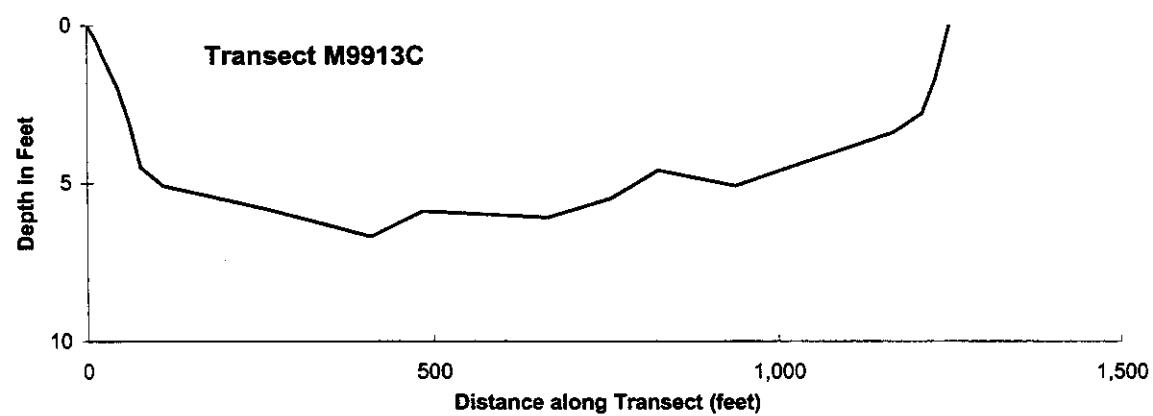
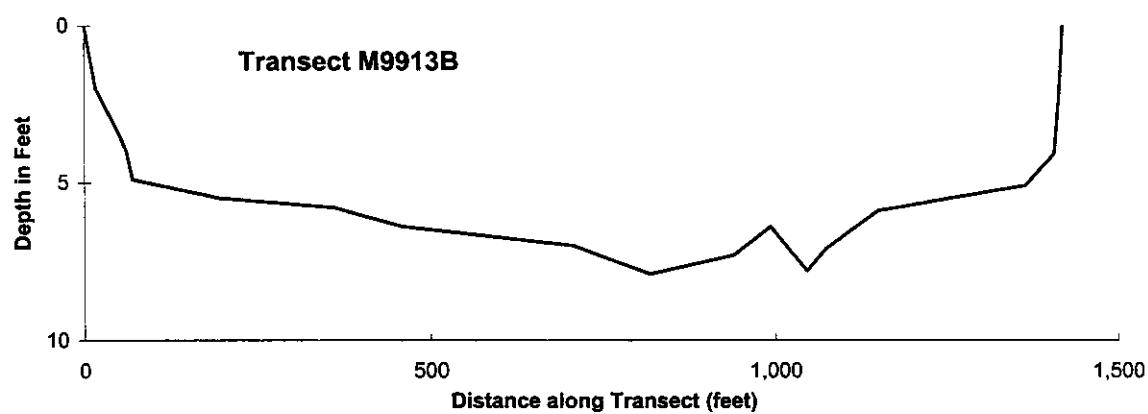
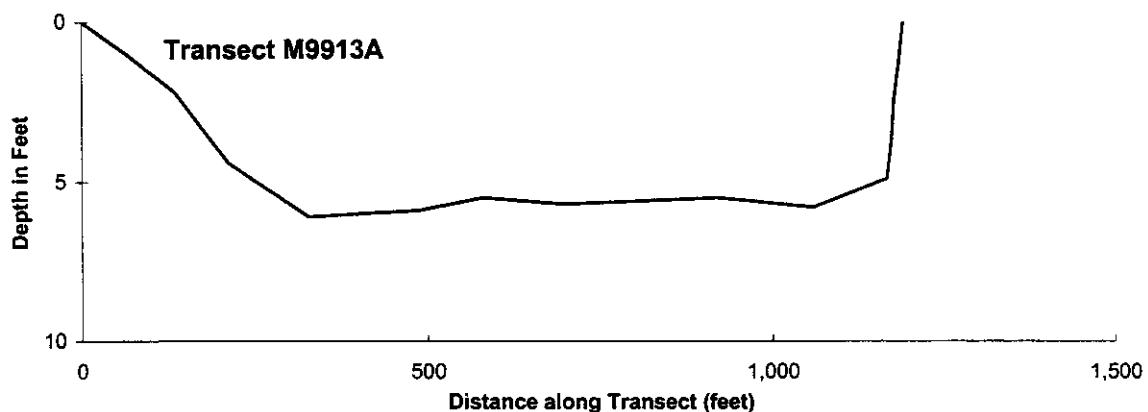
**Location:** 70°15.10'N 151°32.40'W  
**USGS Quad Sheet:** Harrison Bay B-3: T10N R2E Sect. 2  
**Habitat:** Tundra lake  
**Area:** 20 acres  
**Maximum Depth:** 7.9 feet  
**Active Outlet:**  
**Spec. Conductance:** 86  $\mu\text{S}/\text{cm}$   
**pH:** 7.4  
**Calculated Volume:** 17.0 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	11.9	3.9	9.21	2.1	32	55	this study

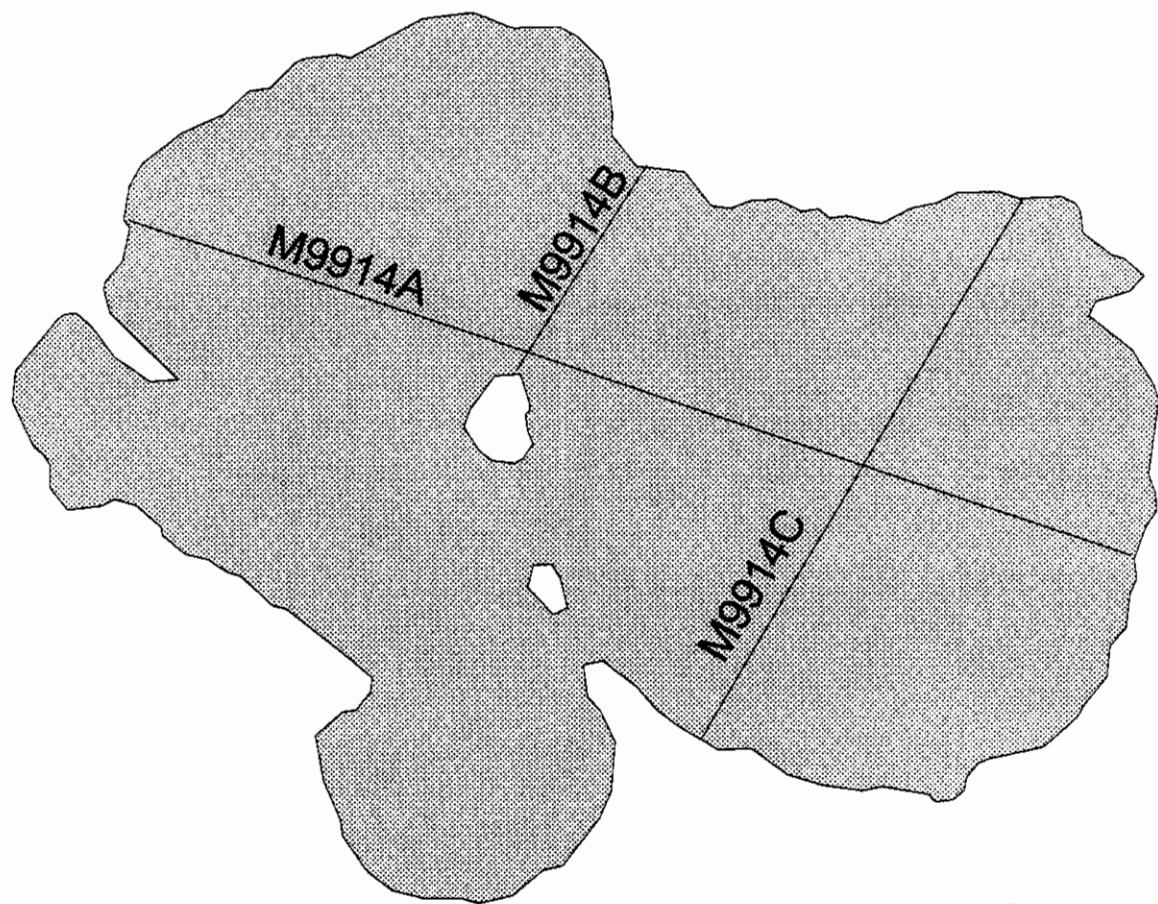
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 12 99	5.4	None	0





# M9914



0    500    1000    1500    2000    Feet

A horizontal scale bar with tick marks at 0, 500, 1000, 1500, and 2000 feet.

**Lake M9914****Other Names:**

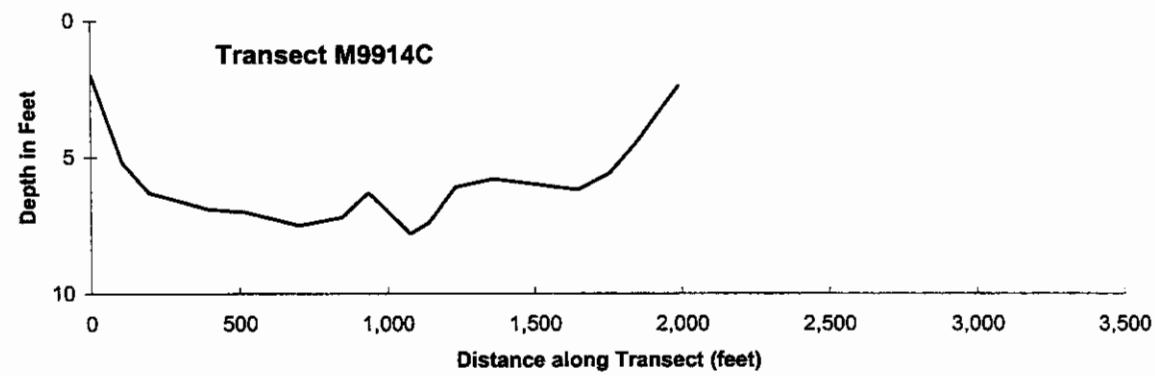
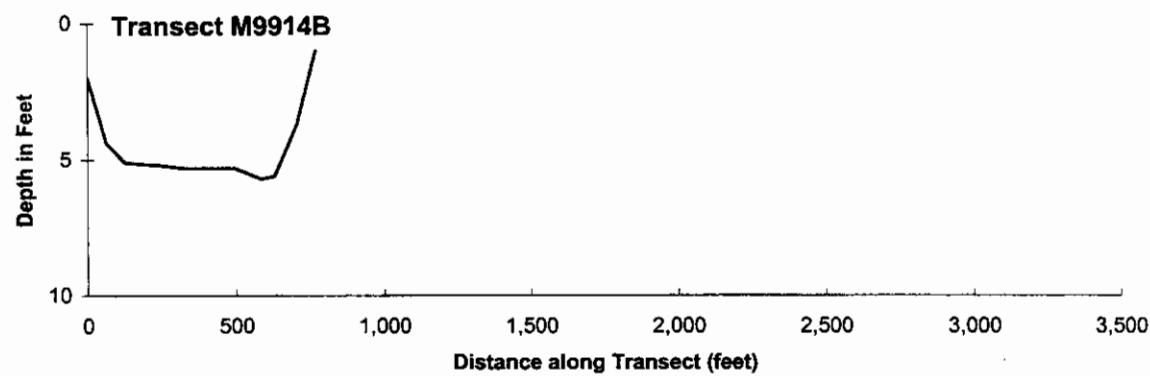
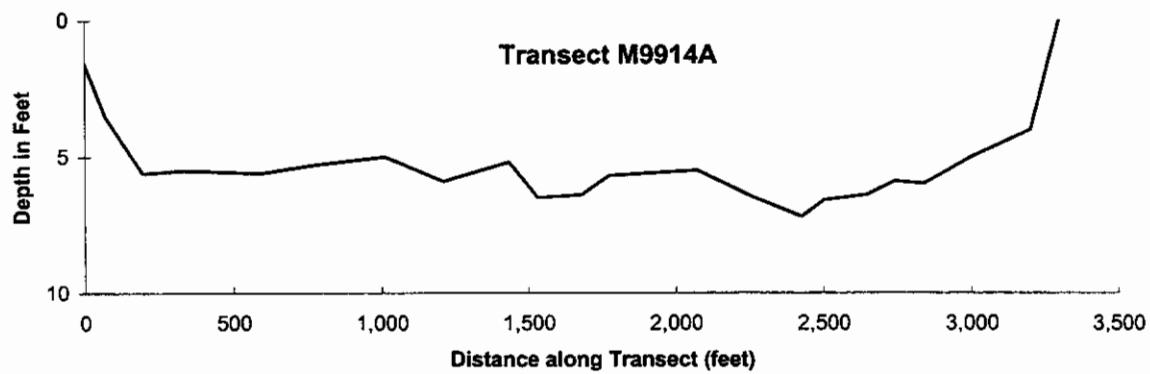
**Location:** 70°14.00'N 150°37.84'W  
**USGS Quad Sheet:** Harrison Bay A-3: T10N R2E Sect. 9  
**Habitat:** Tundra lake  
**Area:** 127 acres  
**Maximum Depth:** 7.8 feet  
**Active Outlet:**  
**Spec. Conductance:** 99  $\mu\text{S}/\text{cm}$   
**pH:** 7.5  
**Calculated Volume:** 106.8 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	12.1	4.5	10.1	2.4	35.9	74	this study

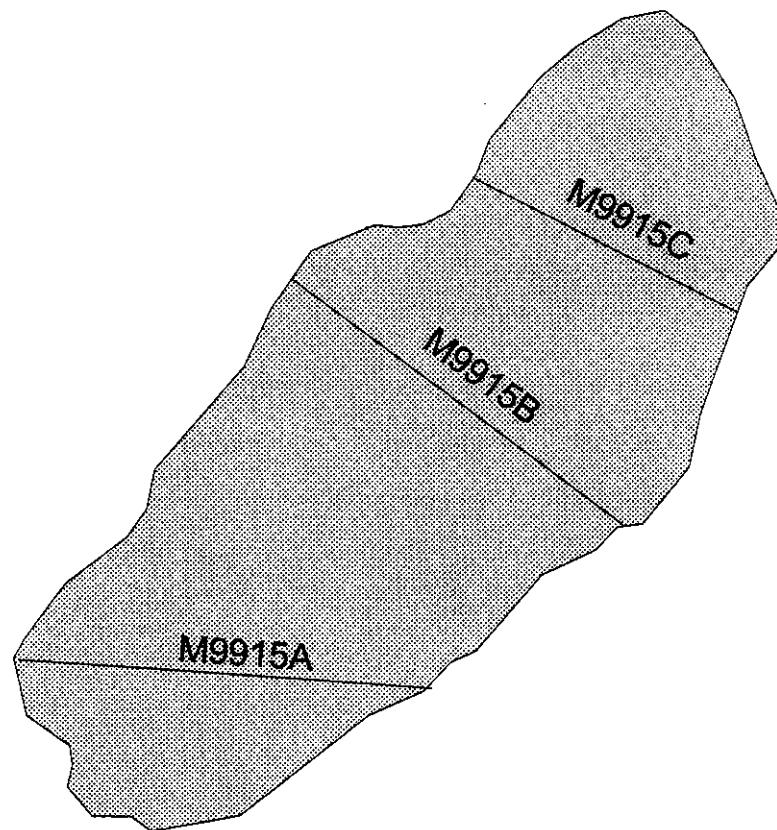
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 12 99	2.0	None	0





# M9915



0    300    600    900    1200    Feet

A scale bar representing 1200 feet, divided into four segments of 300 feet each.

**Lake M9915****Other Names:**

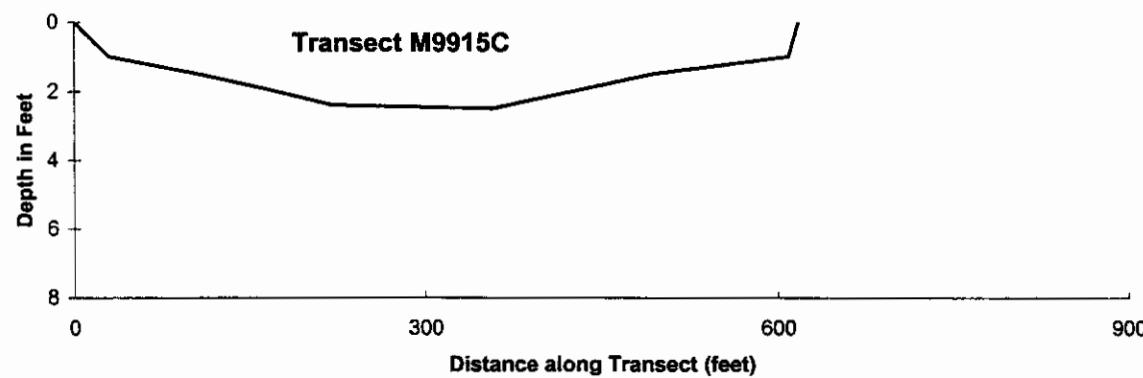
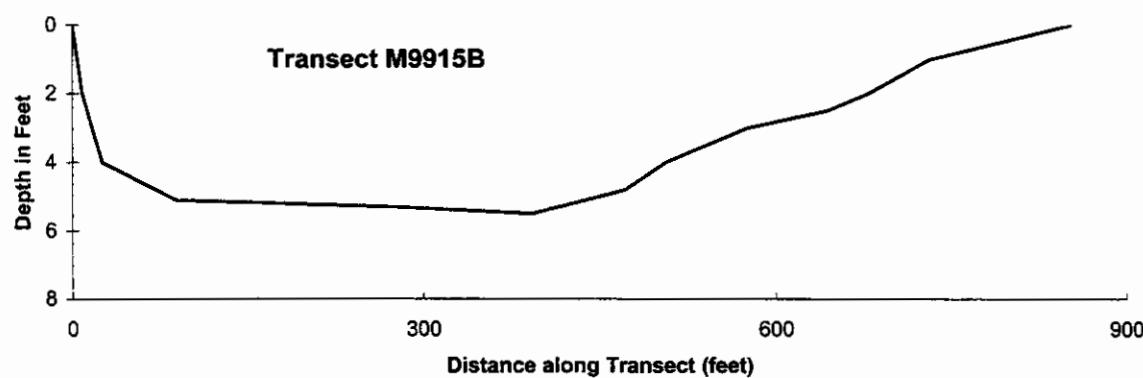
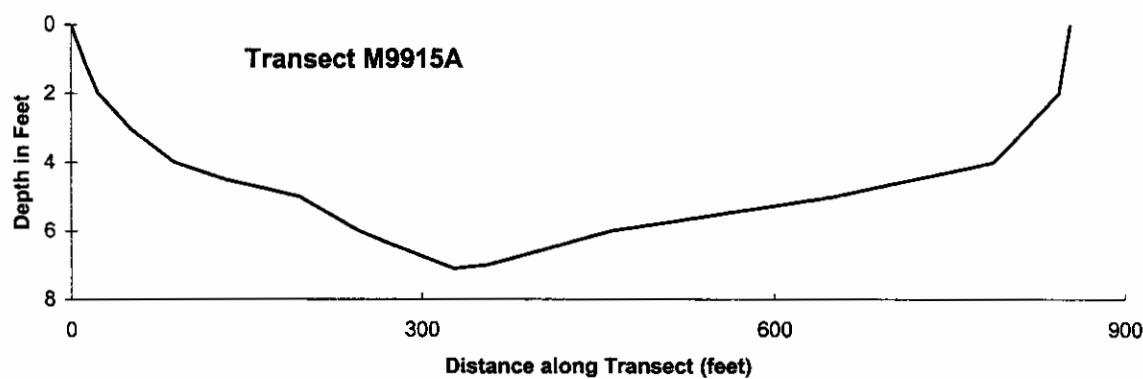
**Location:** 70°12.20'N 151°45.60'W  
**USGS Quad Sheet:** Harrison Bay A-3: T10N R1E Sect. 24  
**Habitat:** Tundra lake  
**Area:** 31 acres  
**Maximum Depth:** 7.1 feet  
**Active Outlet:**  
**Spec. Conductance:** 89  $\mu\text{S}/\text{cm}$   
**pH:** 7.6  
**Calculated Volume:** 23.4 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	14.1	4.1	8.97	2.3	32.8	61	this study

**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 13 99	5.5	None	0



## Lake M9916

### Other Names:

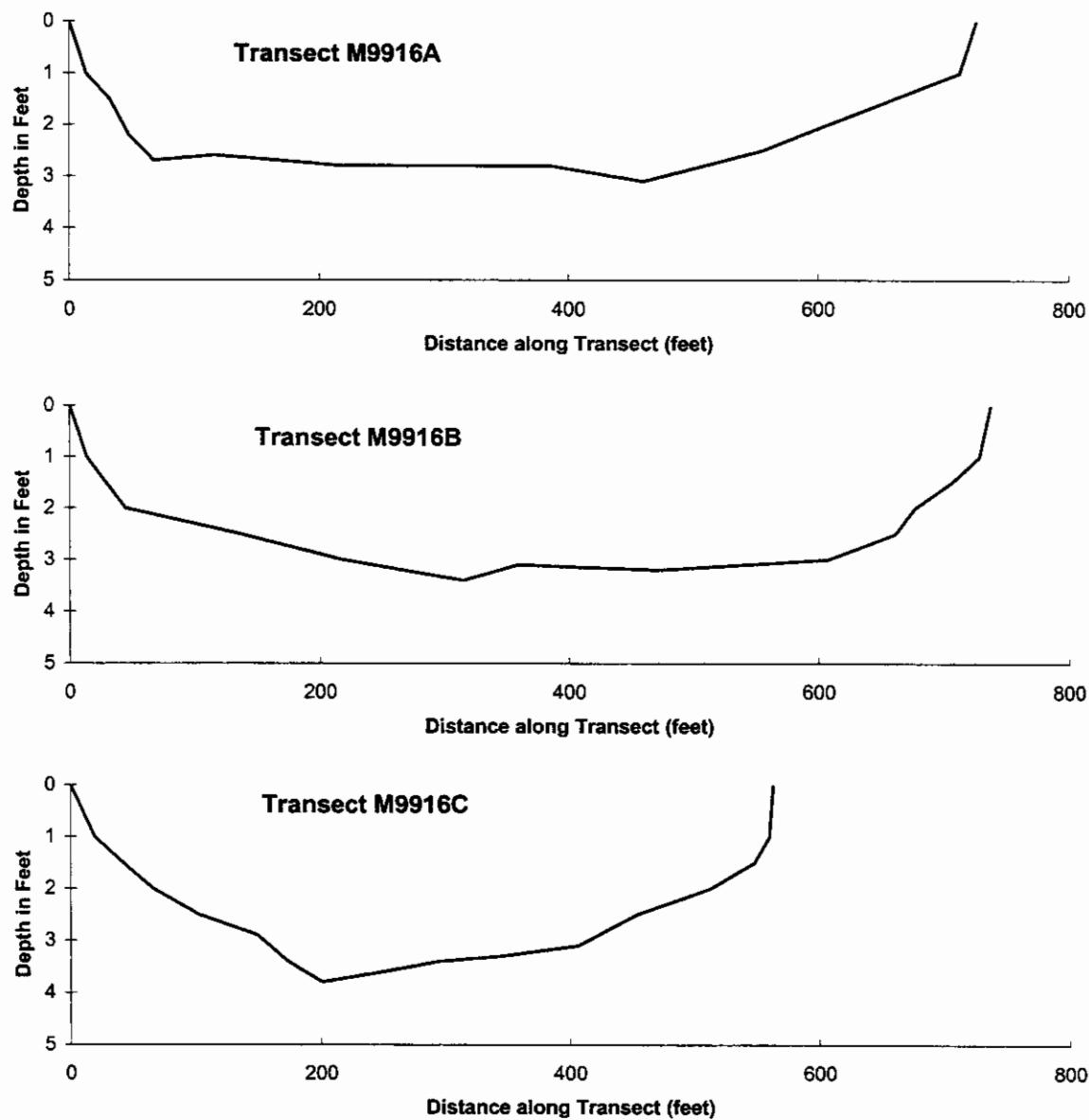
**Location:** 70°11.82'N 151°44.65'W  
**USGS Quad Sheet:** Harrison Bay A-3: T10N R2E Sect. 30  
**Habitat:** Tundra lake  
**Area:** 43 acres  
**Maximum Depth:** 3.8 feet  
**Active Outlet:**  
**Spec. Conductance:** 147  $\mu$ S/cm  
**pH:** 9.0  
**Calculated Volume:** 17.5 million gallons  
**Permittable Volume:** No fish concern

### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	17.5	8	15.4	3.8	55	120	this study

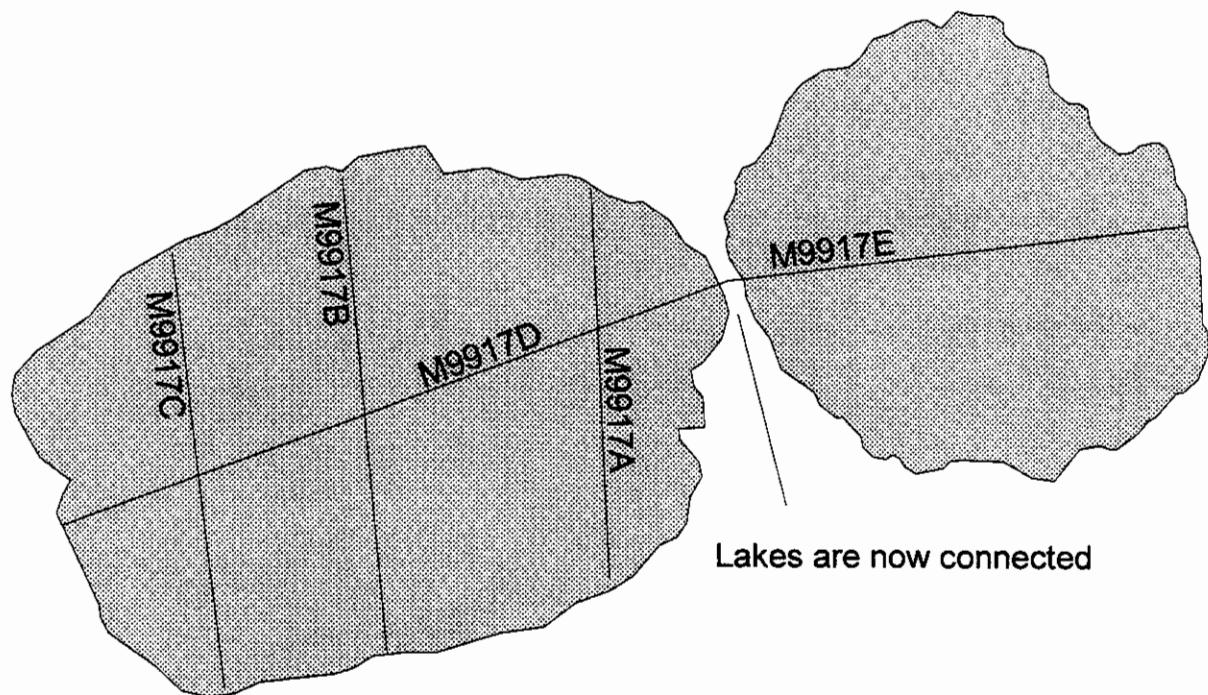
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 13 99	6.3	None	0





# M9917



0 500 1000 1500 2000 2500 3000 Feet  


## Lake M9917

### Other Names:

Location:  $70^{\circ}11.18'N\ 151^{\circ}49.52'W$   
USGS Quad Sheet: Harrison Bay A-4: T10N R1E Sect. 26  
Habitat: Tundra lake  
Area: 175 acres  
Maximum Depth: 9.8 feet  
Active Outlet:  
Spec. Conductance: 208  $\mu S/cm$   
pH: 8.3  
Calculated Volume: 184.5 million gallons  
Permittable Volume: 7.9 million gallons

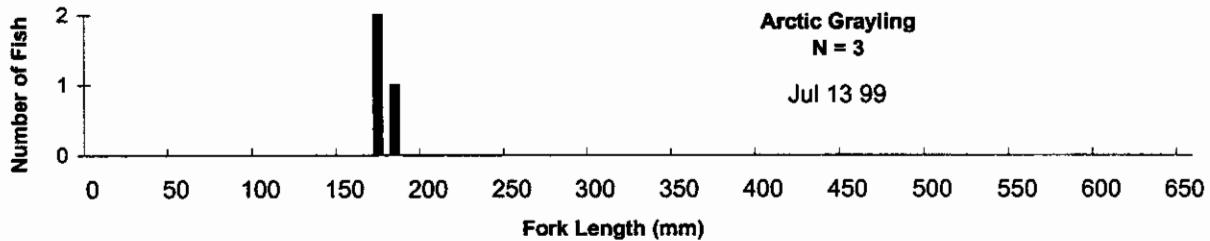
### Water Quality:

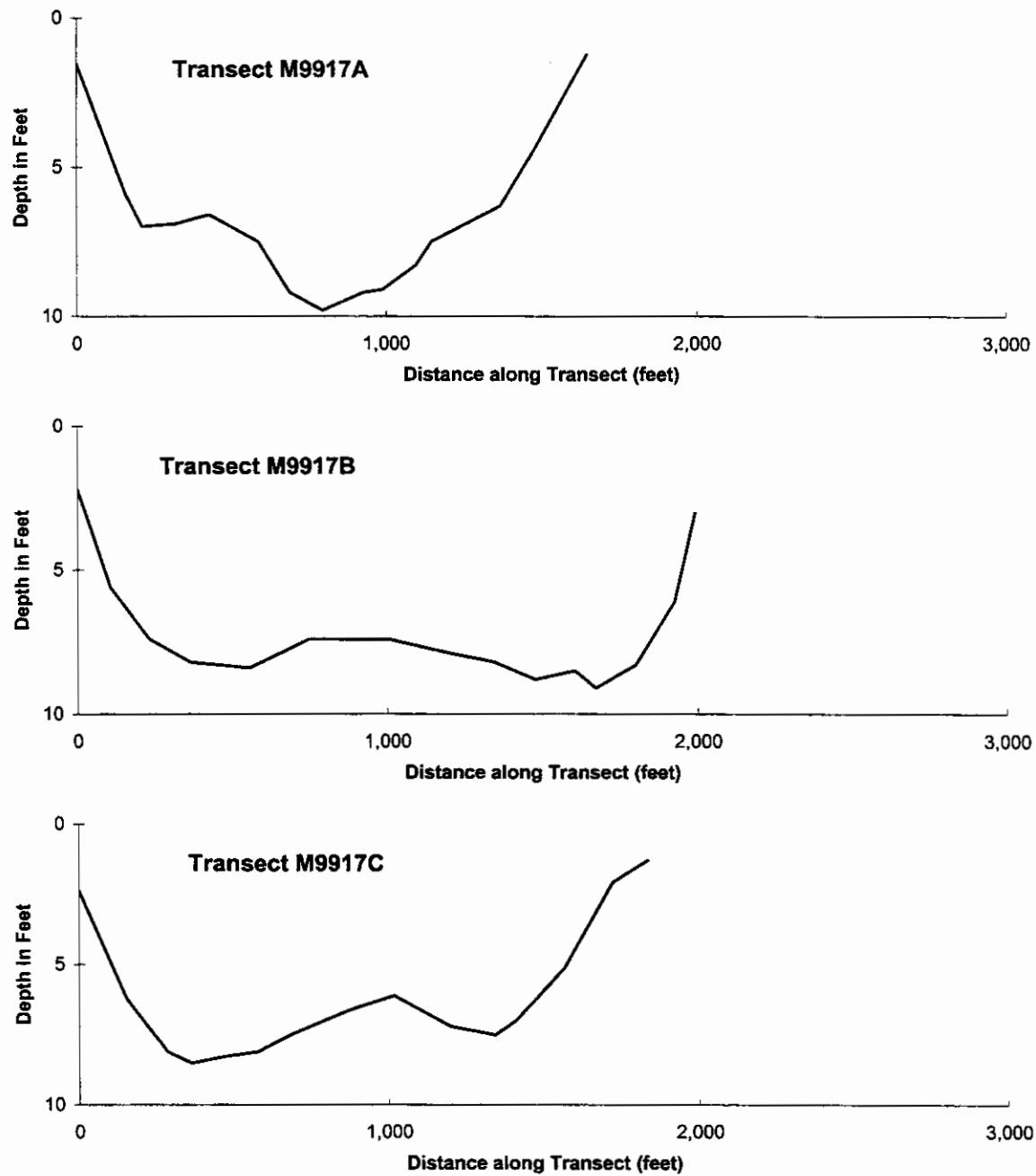
Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness	Total Dissolved Solids (mg/l)
					[CaCO <sub>3</sub> ] (mg/l)	
1999	19.3	6.4	27.7	4.3	88.6	138

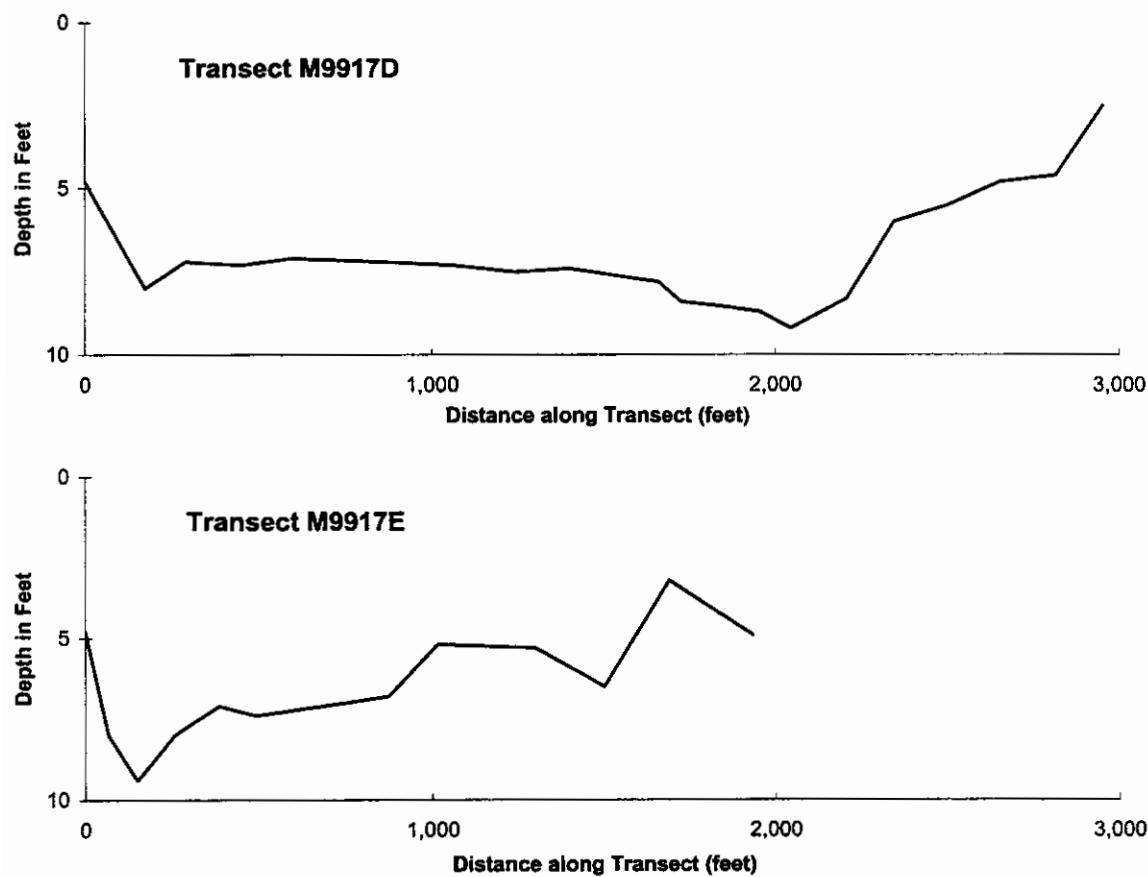
this study

### Catch Record:

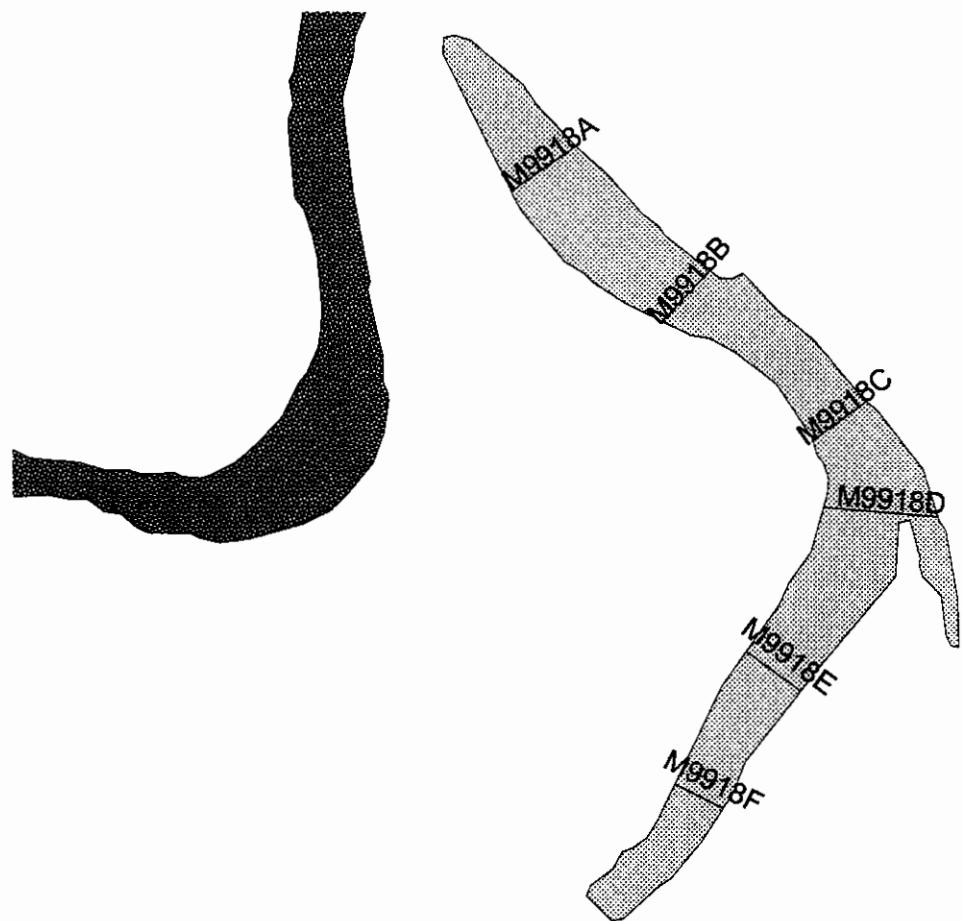
Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Jul 13 99	4.3	Arctic grayling	3	174-182







# M9918



0 1000 2000 3000 Feet

## Lake M9918

### Other Names:

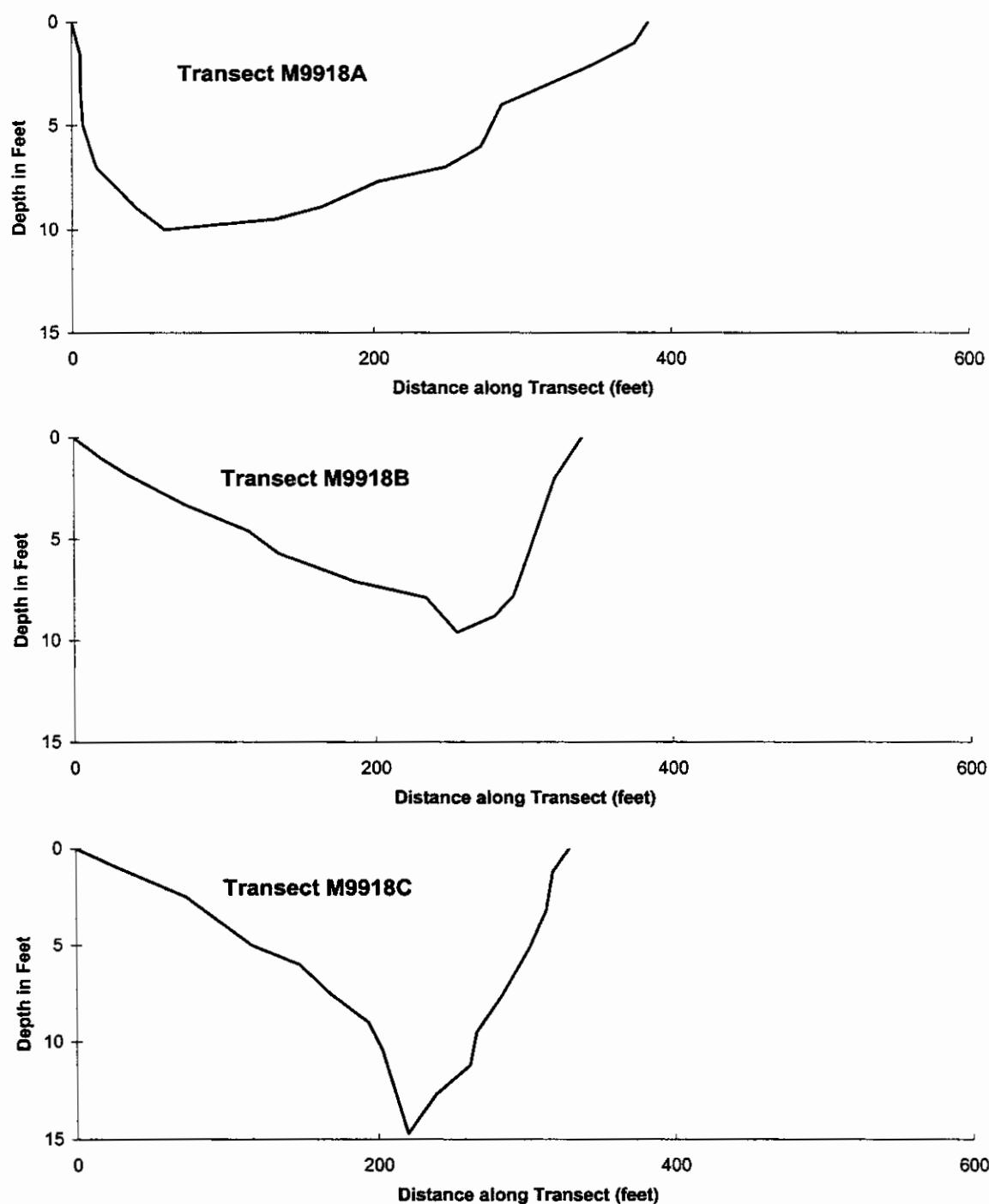
**Location:** 70°13.27'N 151°46.26'W  
**USGS Quad Sheet:** Harrison Bay A-3: T10N R1E Sect. 13  
**Habitat:** Oxbow lake (off Judy Creek)  
**Area:** 42 acres  
**Maximum Depth:** 14.7 feet  
**Active Outlet:**  
**Spec. Conductance:** 75  $\mu\text{S}/\text{cm}$   
**pH:** 8.0  
**Calculated Volume:** 65.6 million gallons  
**Permittable Volume:** 5.2 million gallons

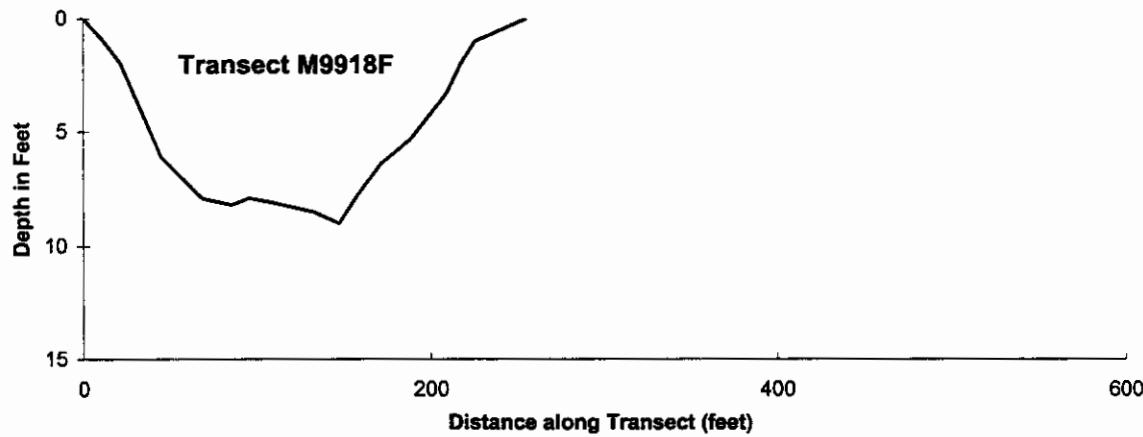
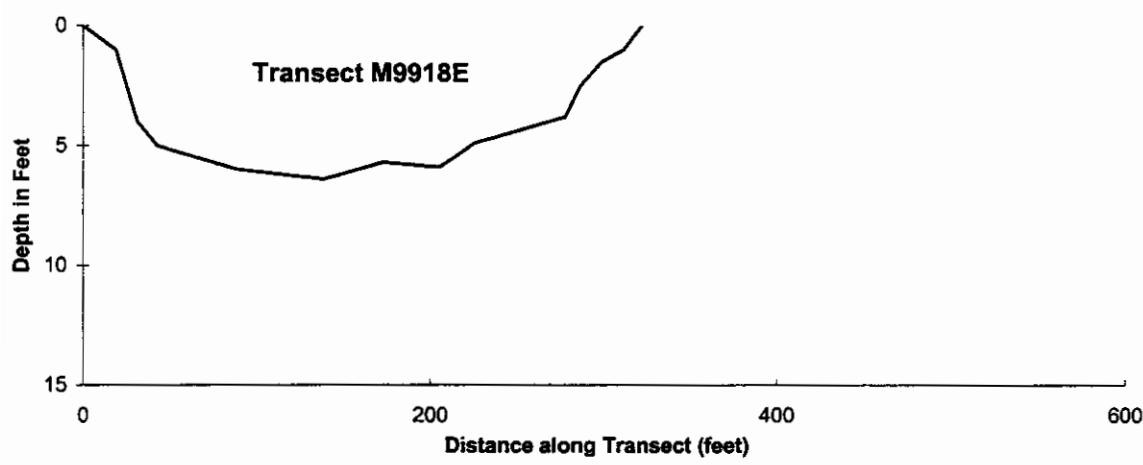
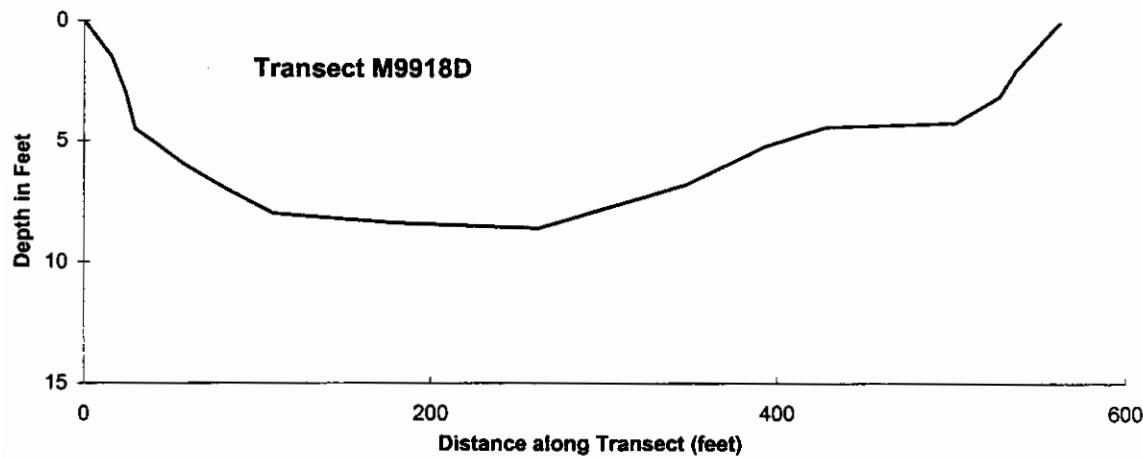
### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total	Dissolved Solids (mg/l)	Source
						Dissolved Solids (mg/l)		
1999	6.95	2.8	8.52	1.8	29.8	44	this study	

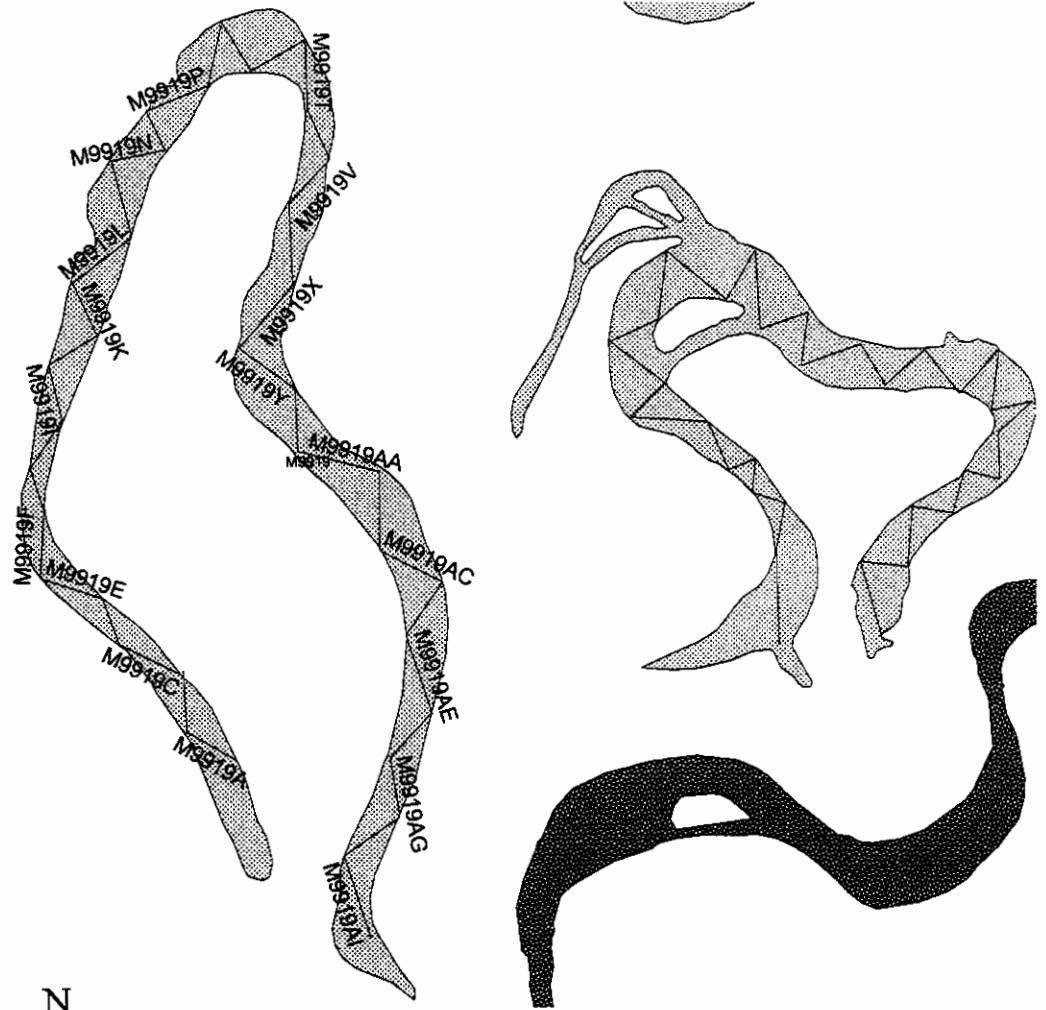
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Jul 14 99	6.3	Arctic grayling Least cisco	1 1	152 326





# M9919



0 1000 2000 3000 4000 Feet

A scale bar with markings at 0, 1000, 2000, 3000, and 4000 feet.

## Lake M9919

### Other Names:

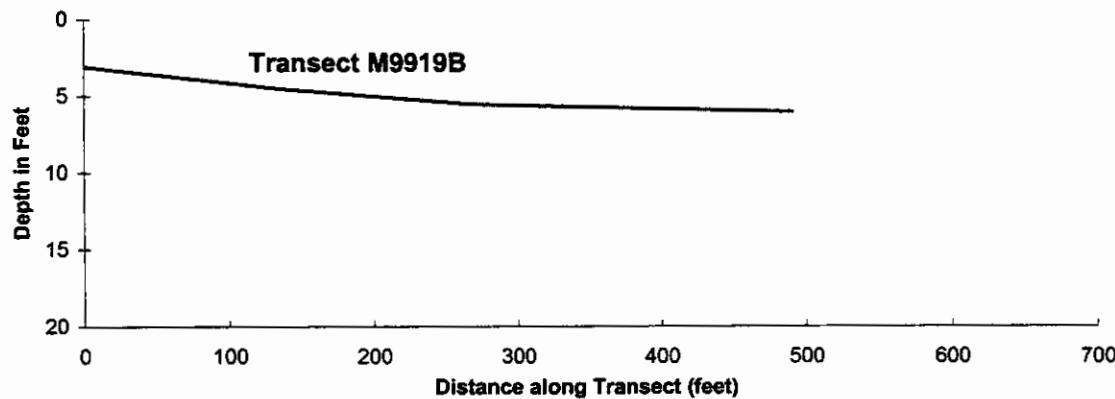
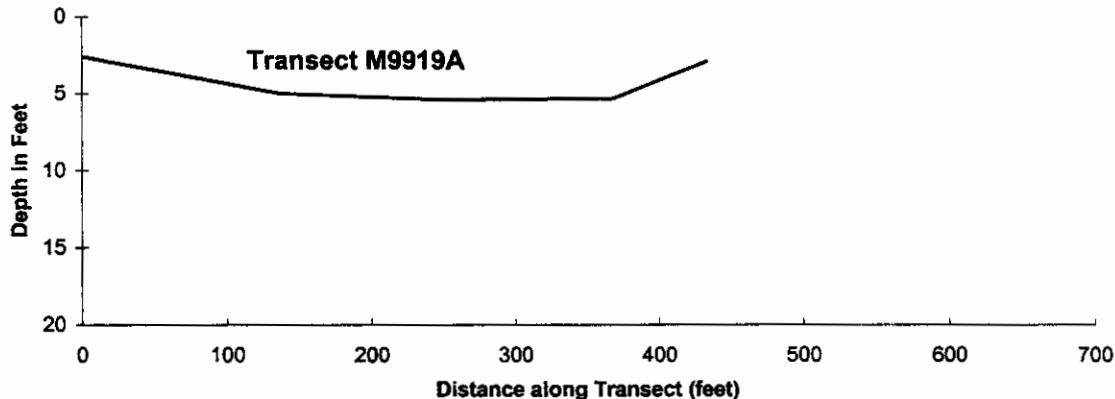
Location: 70°13.50'N 151°54.50'W  
USGS Quad Sheet: Harrison Bay A-4: T10N R1E Sect. 9-16  
Habitat: Oxbow lake (off Judy Creek)  
Area: 245 acres  
Maximum Depth: 14.9 feet  
Active Outlet:  
Spec. Conductance: 106  $\mu\text{S}/\text{cm}$   
pH: 7.8  
Calculated Volume: 23.7 million gallons  
Permittable Volume: 3.5 million gallons

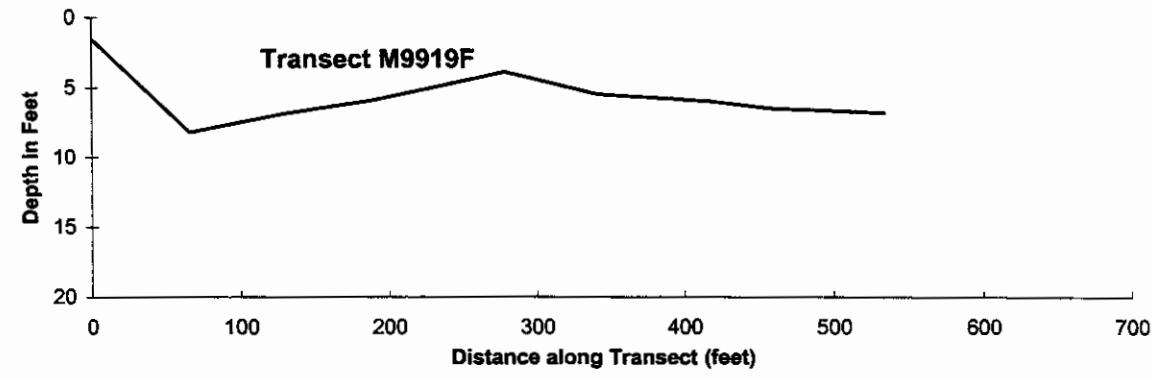
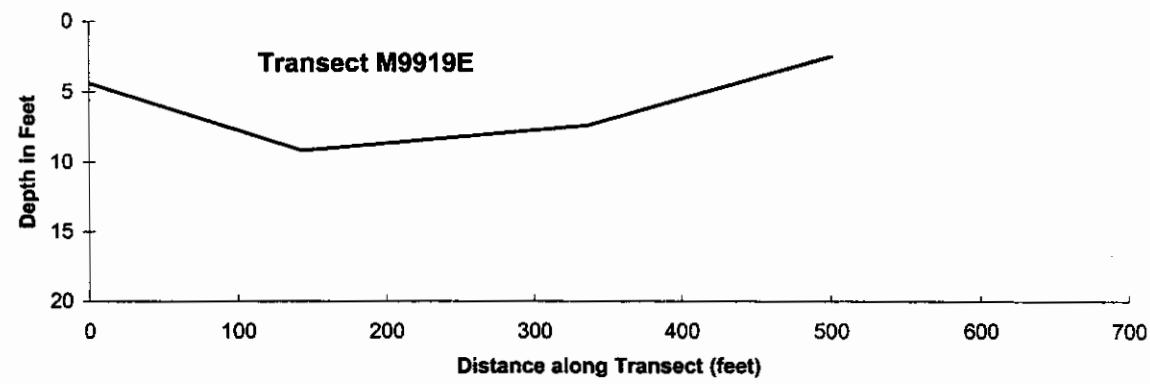
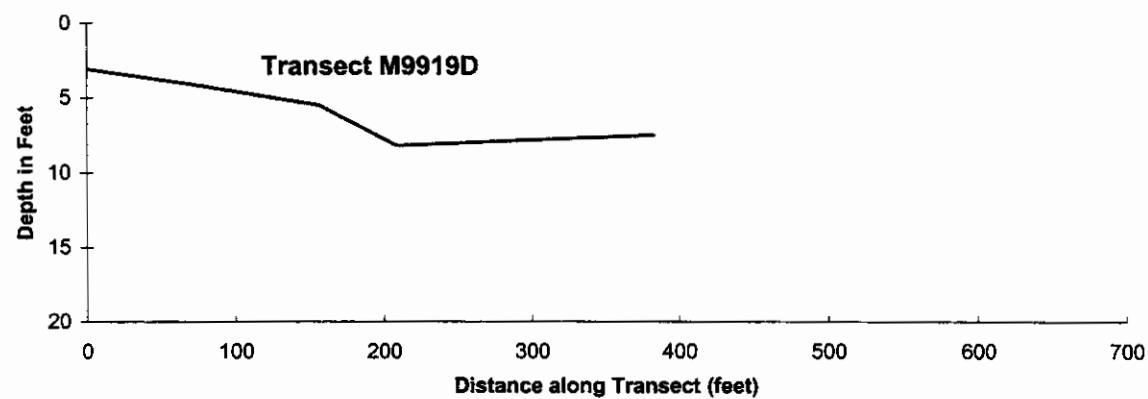
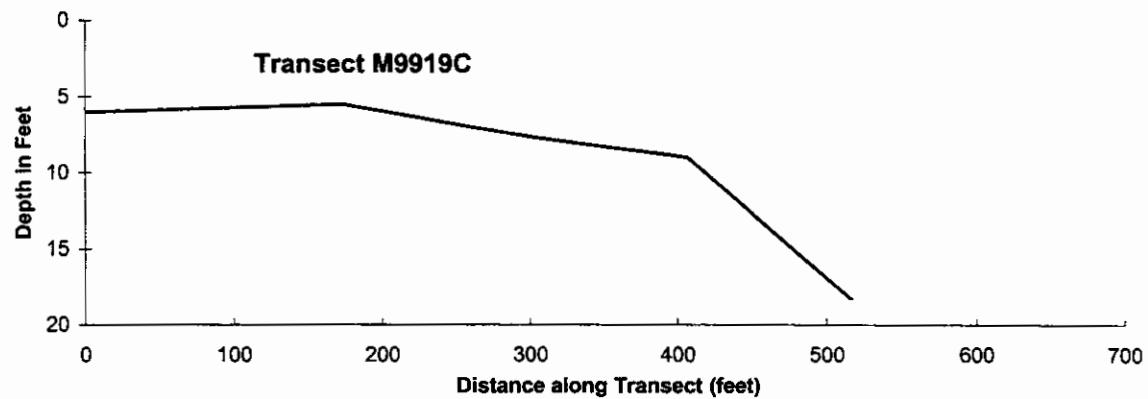
### Water Quality:

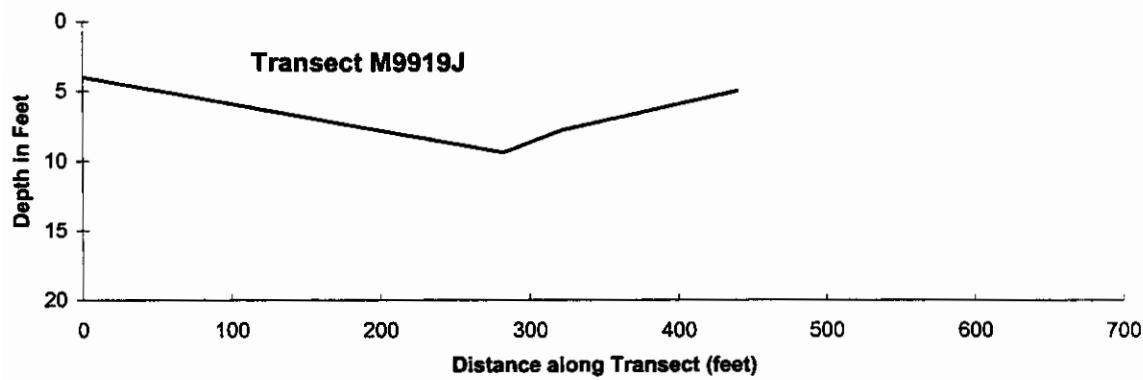
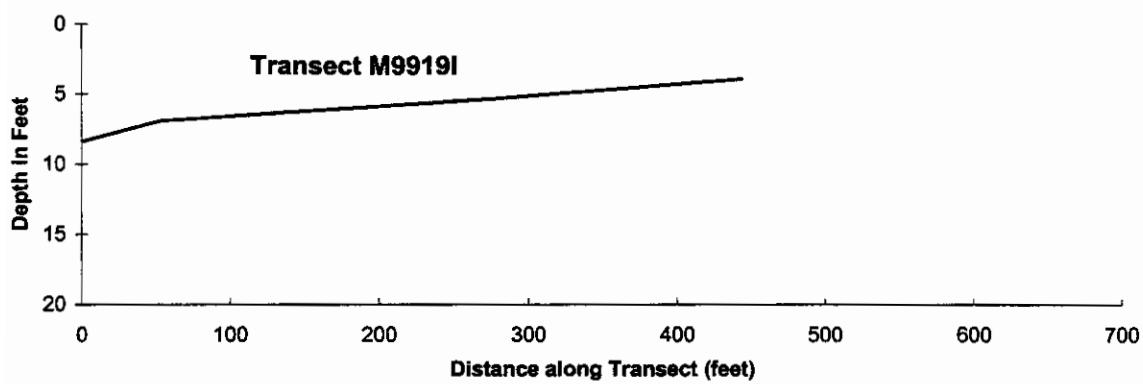
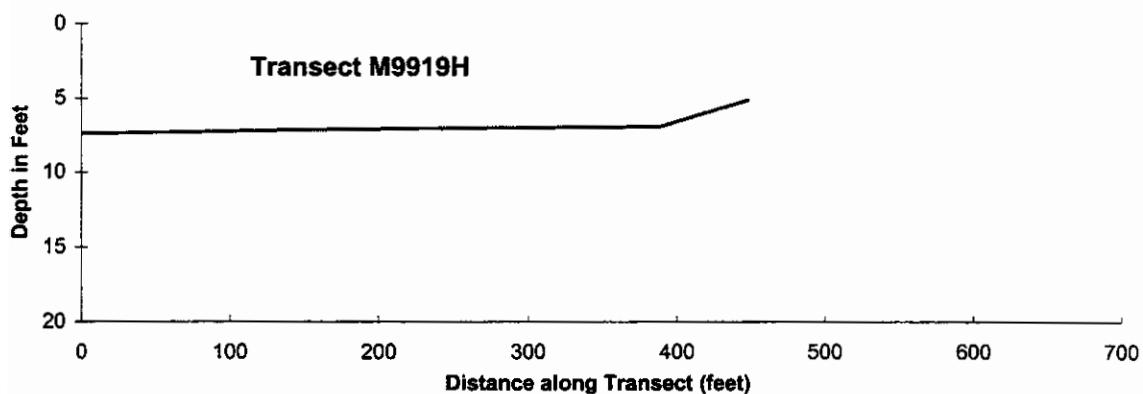
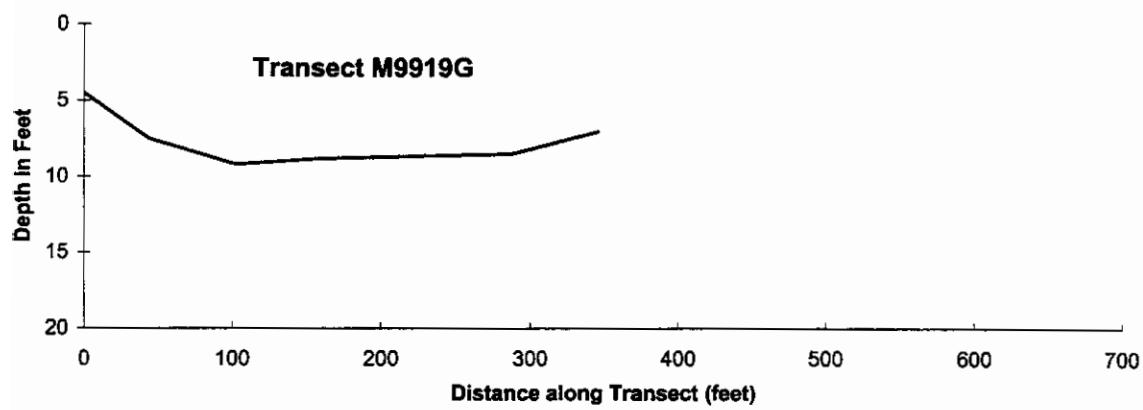
Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	10.4	3.7	12.8	2.5	43.2	138	this study

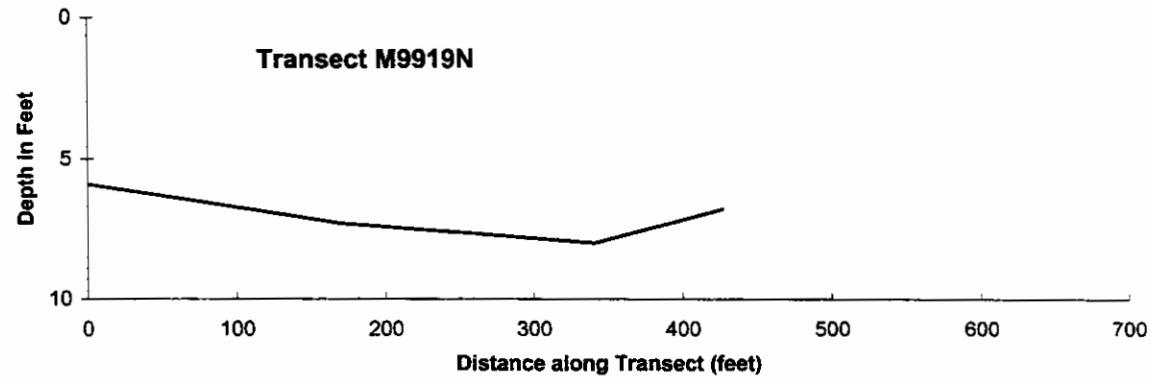
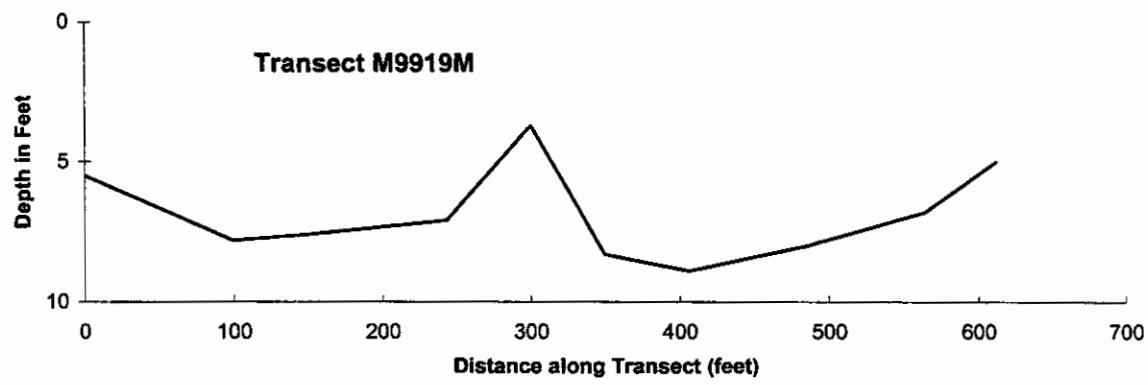
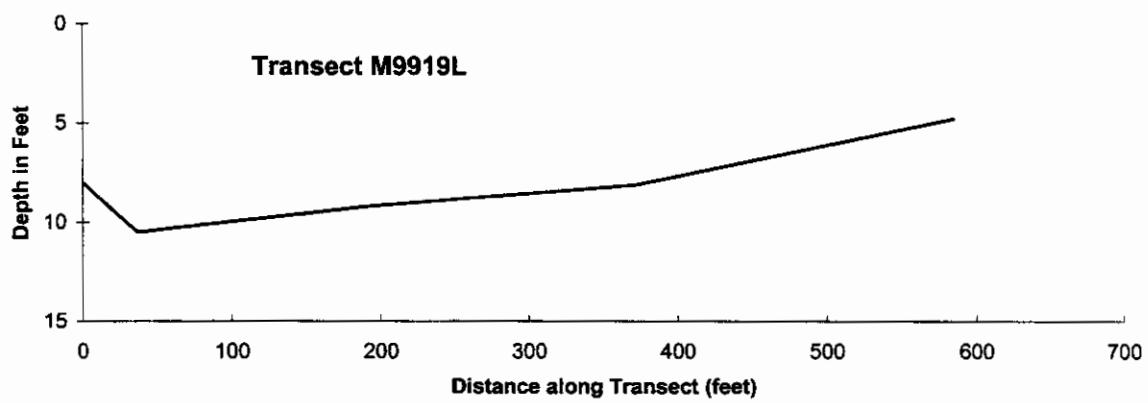
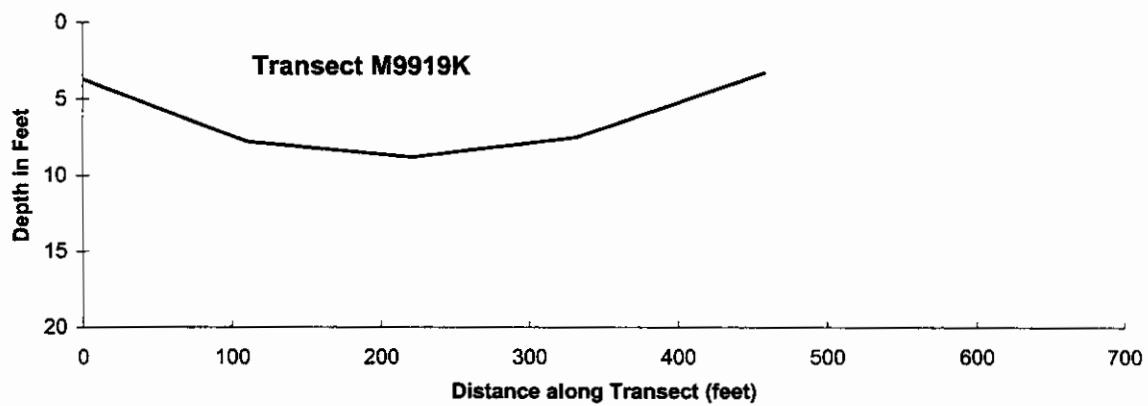
### Catch Record:

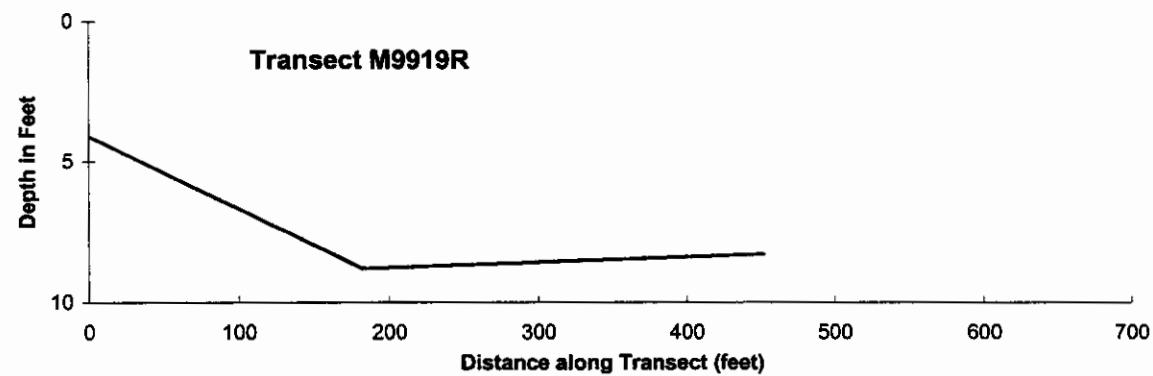
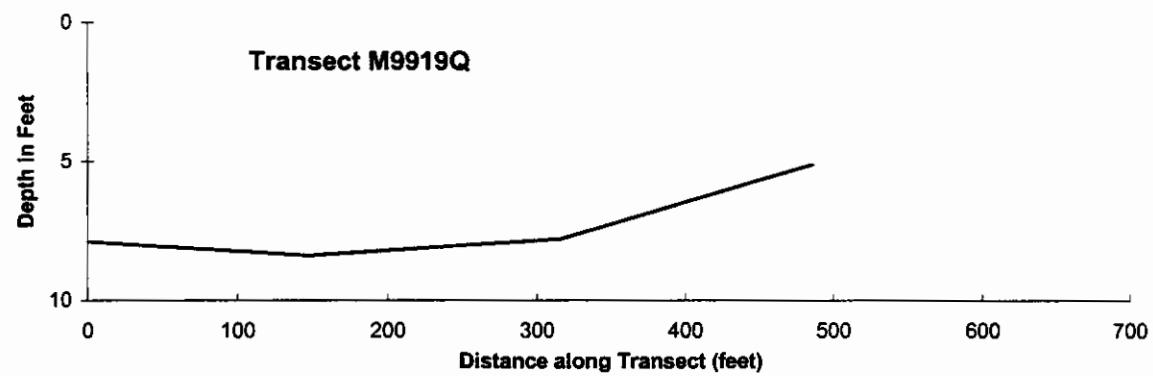
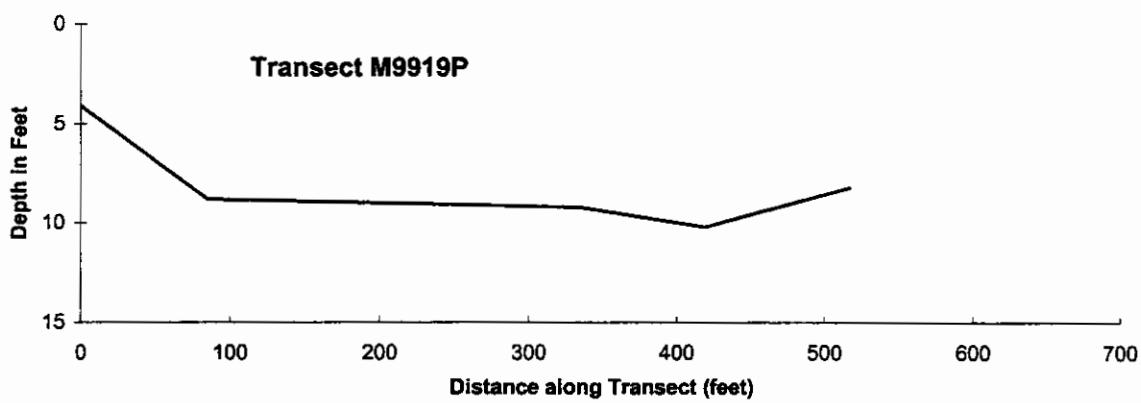
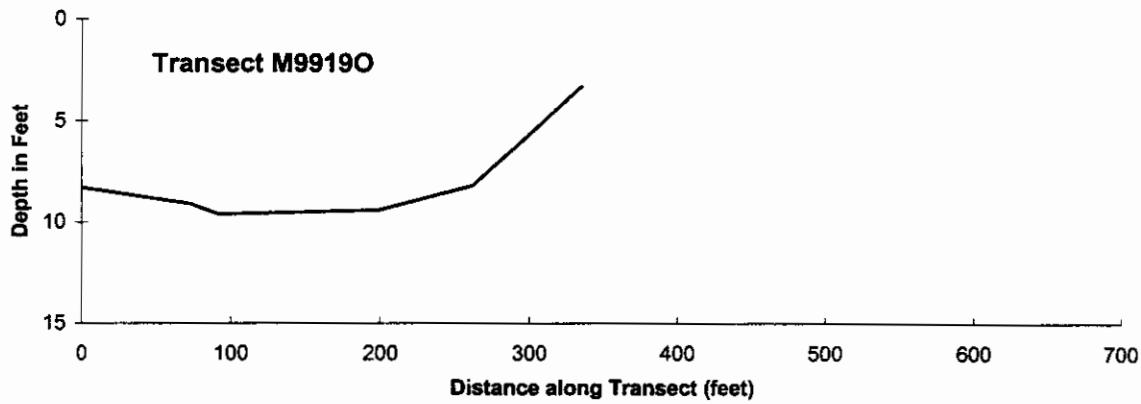
Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Jul 14 99	6.9	Least cisco	1	444

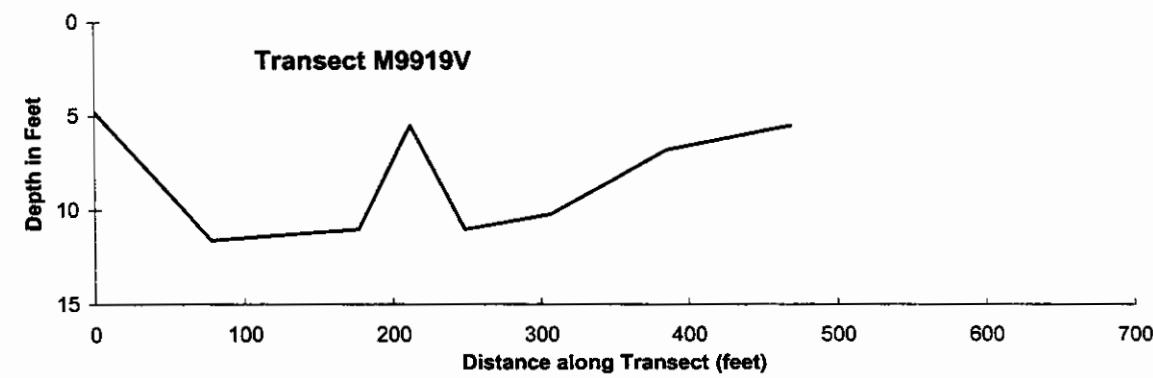
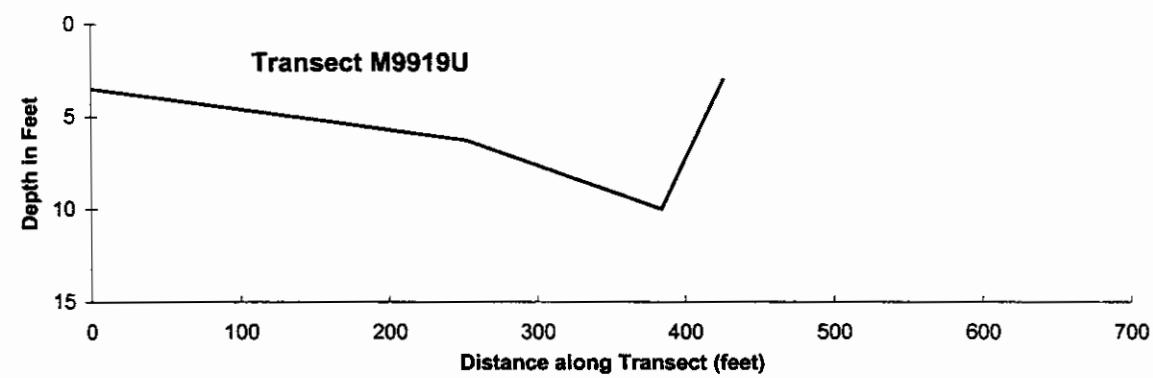
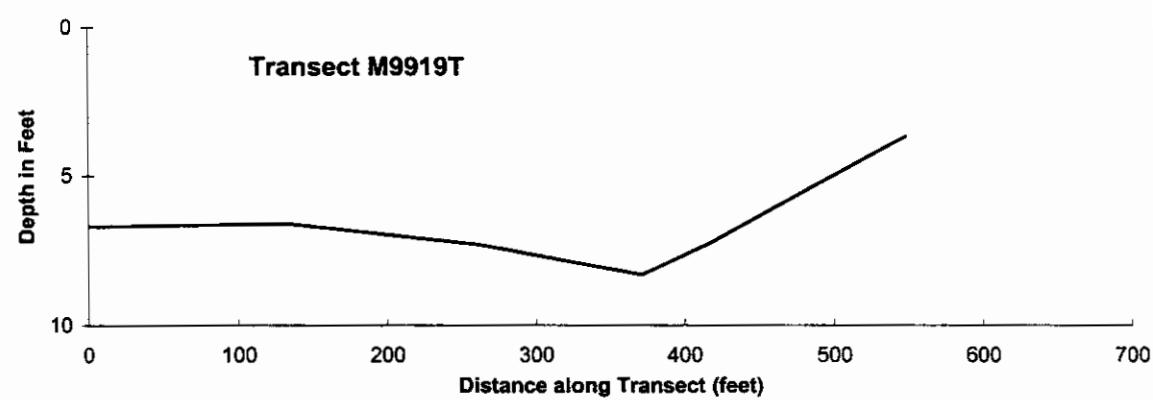
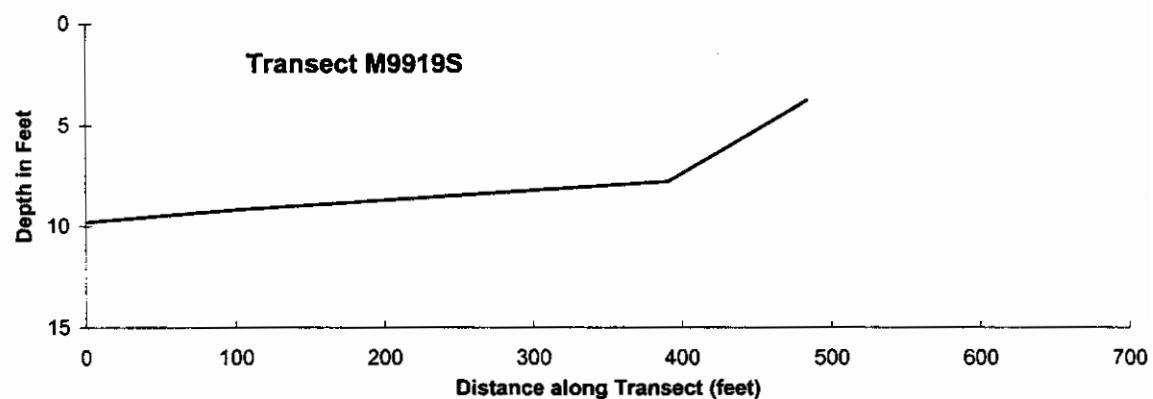


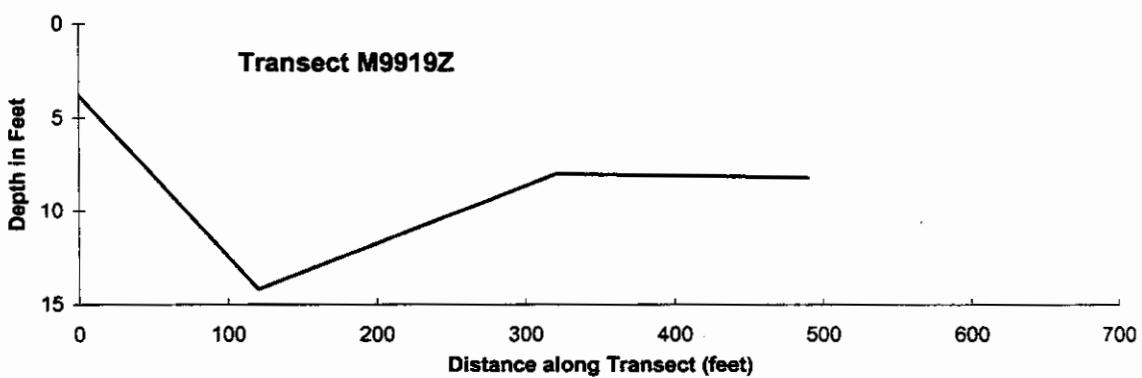
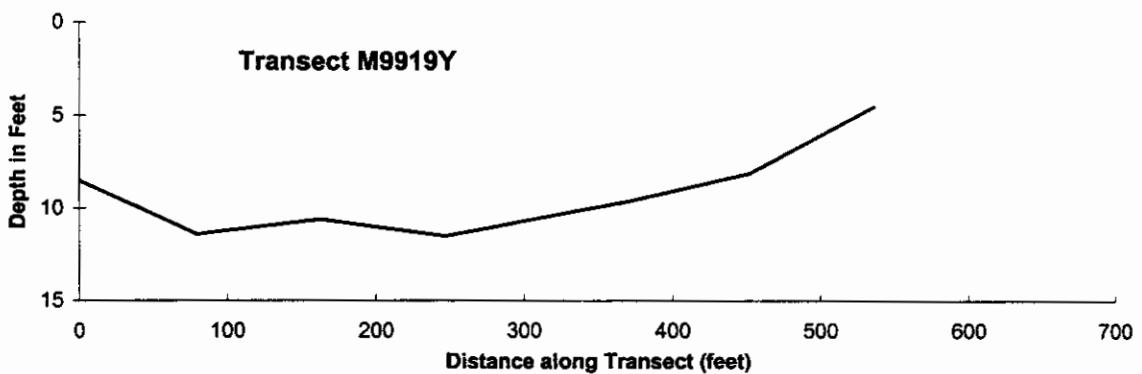
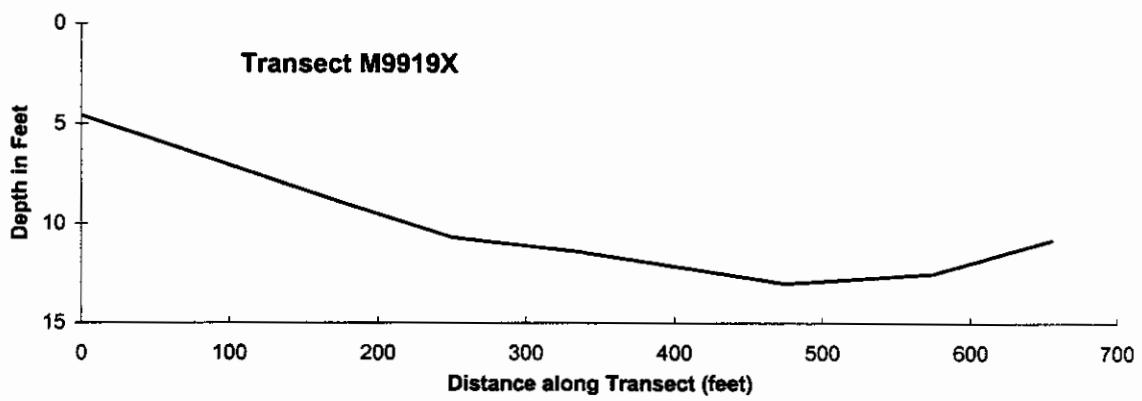
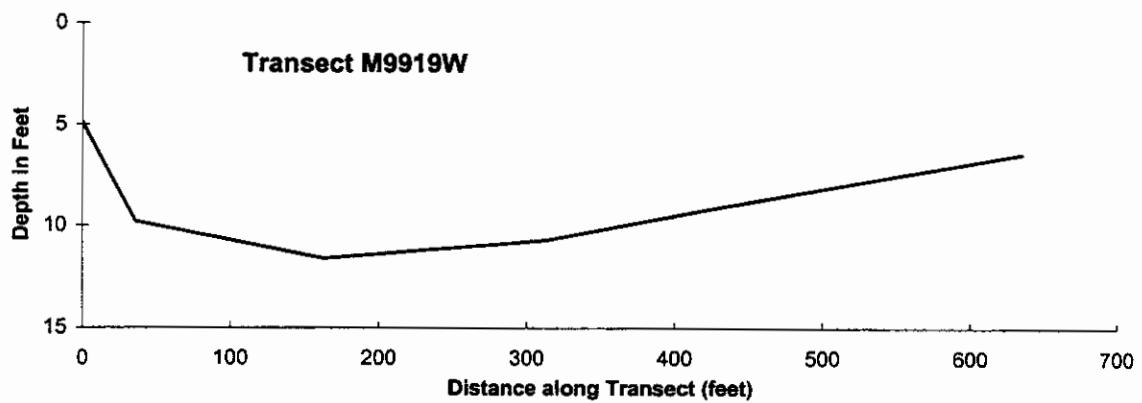


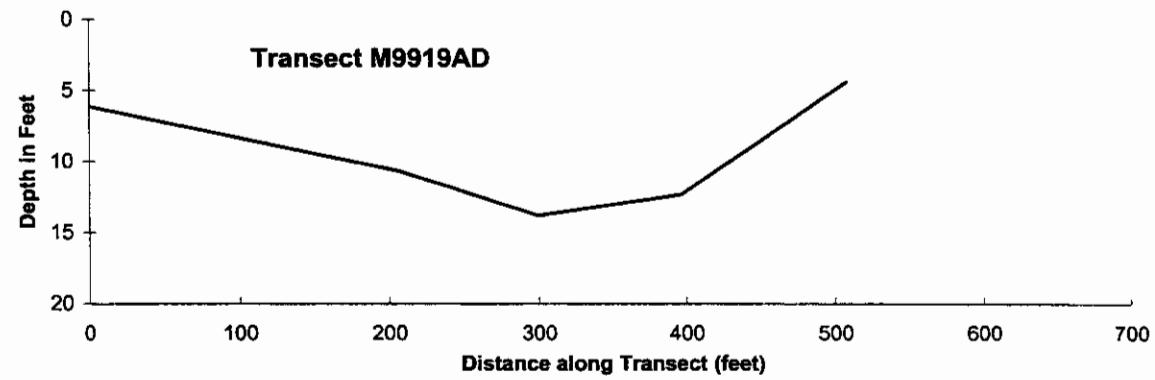
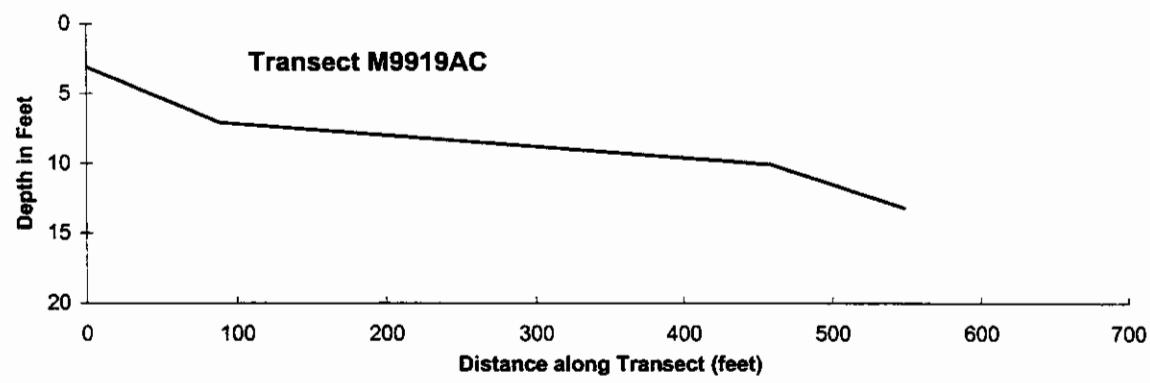
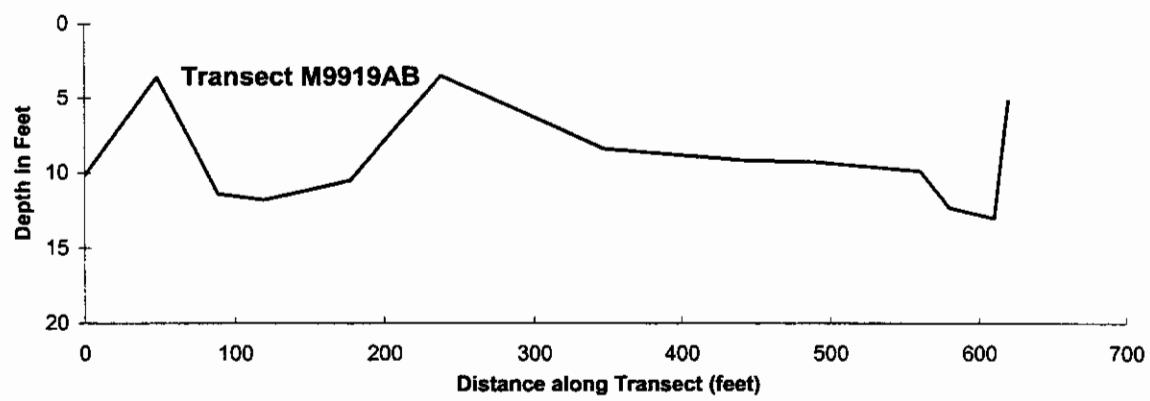
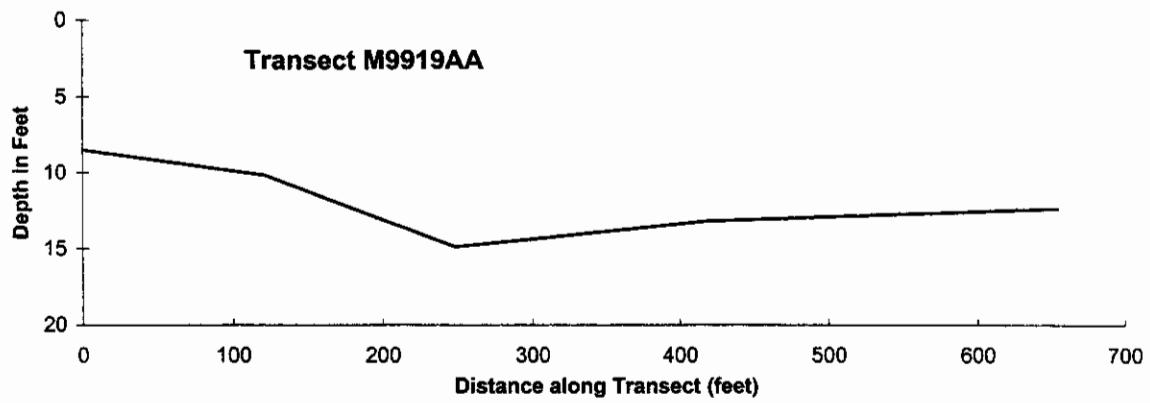


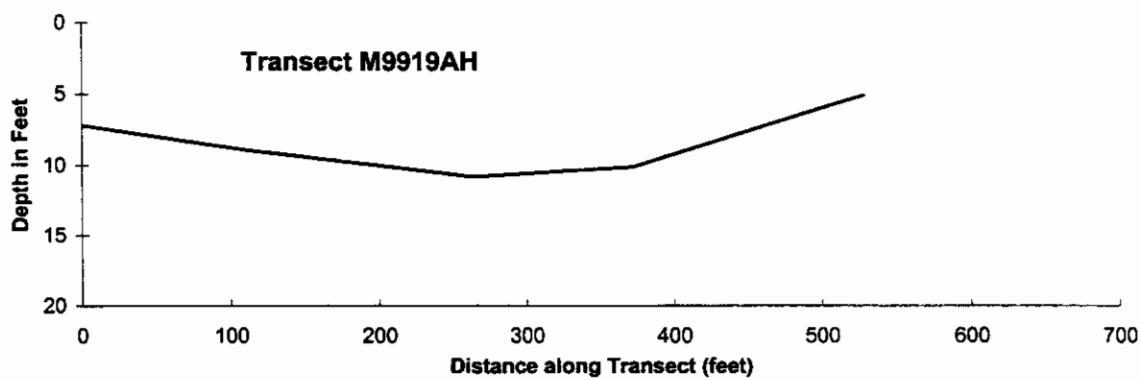
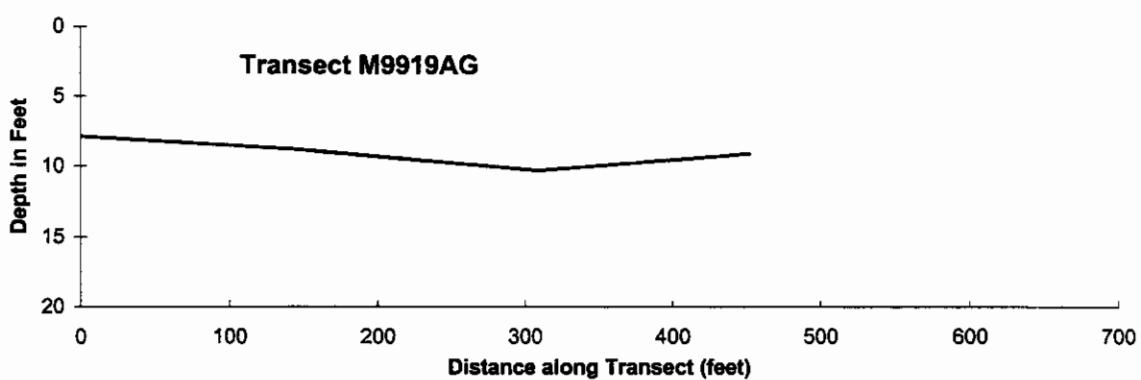
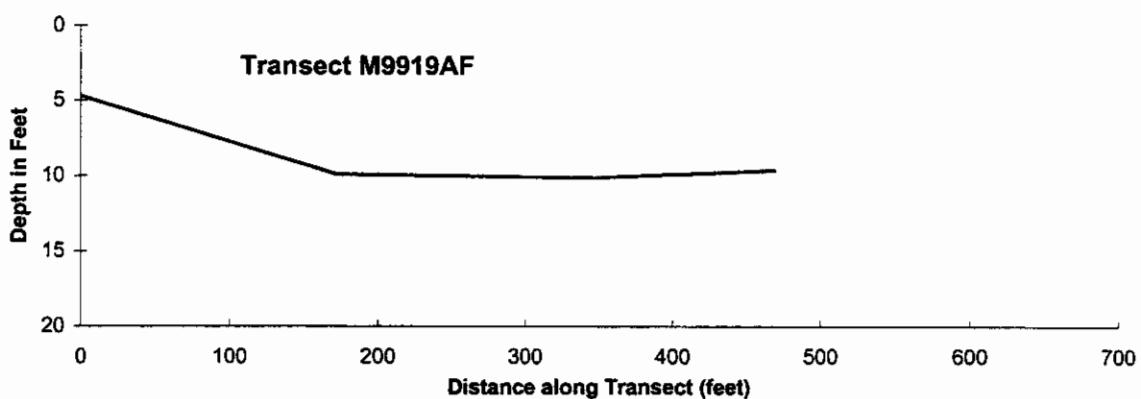
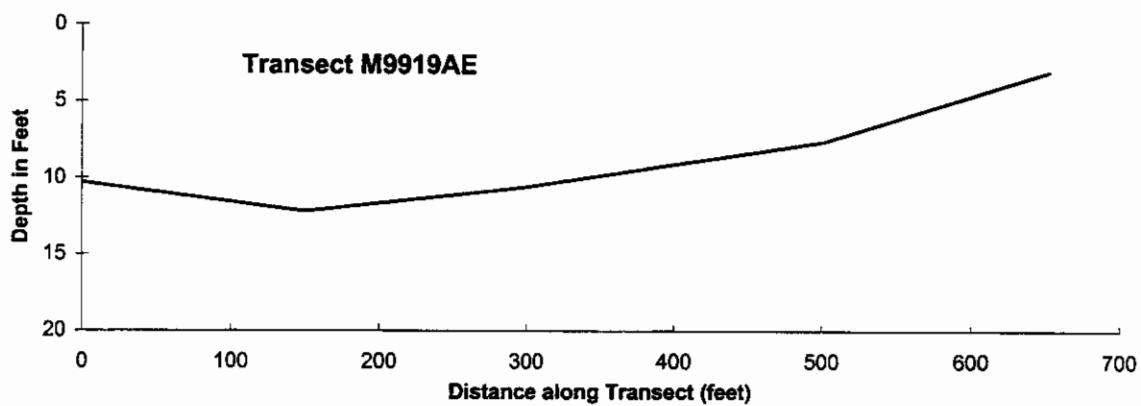


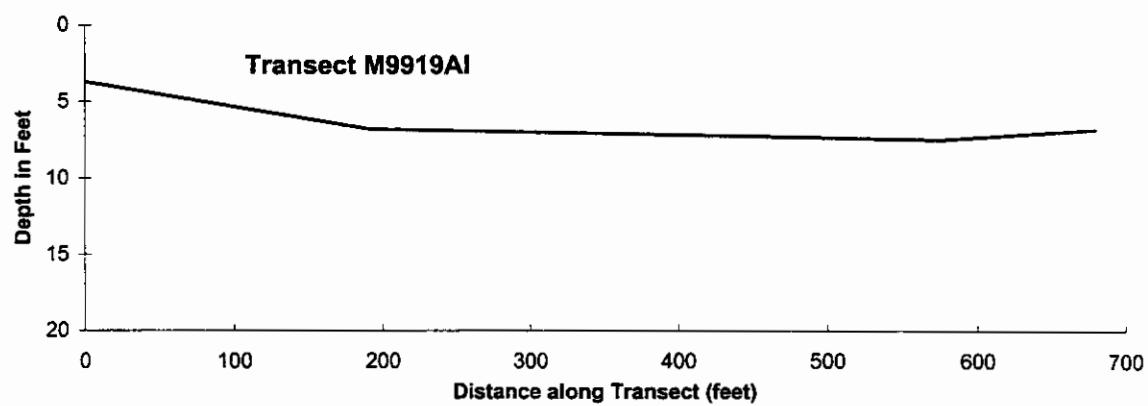






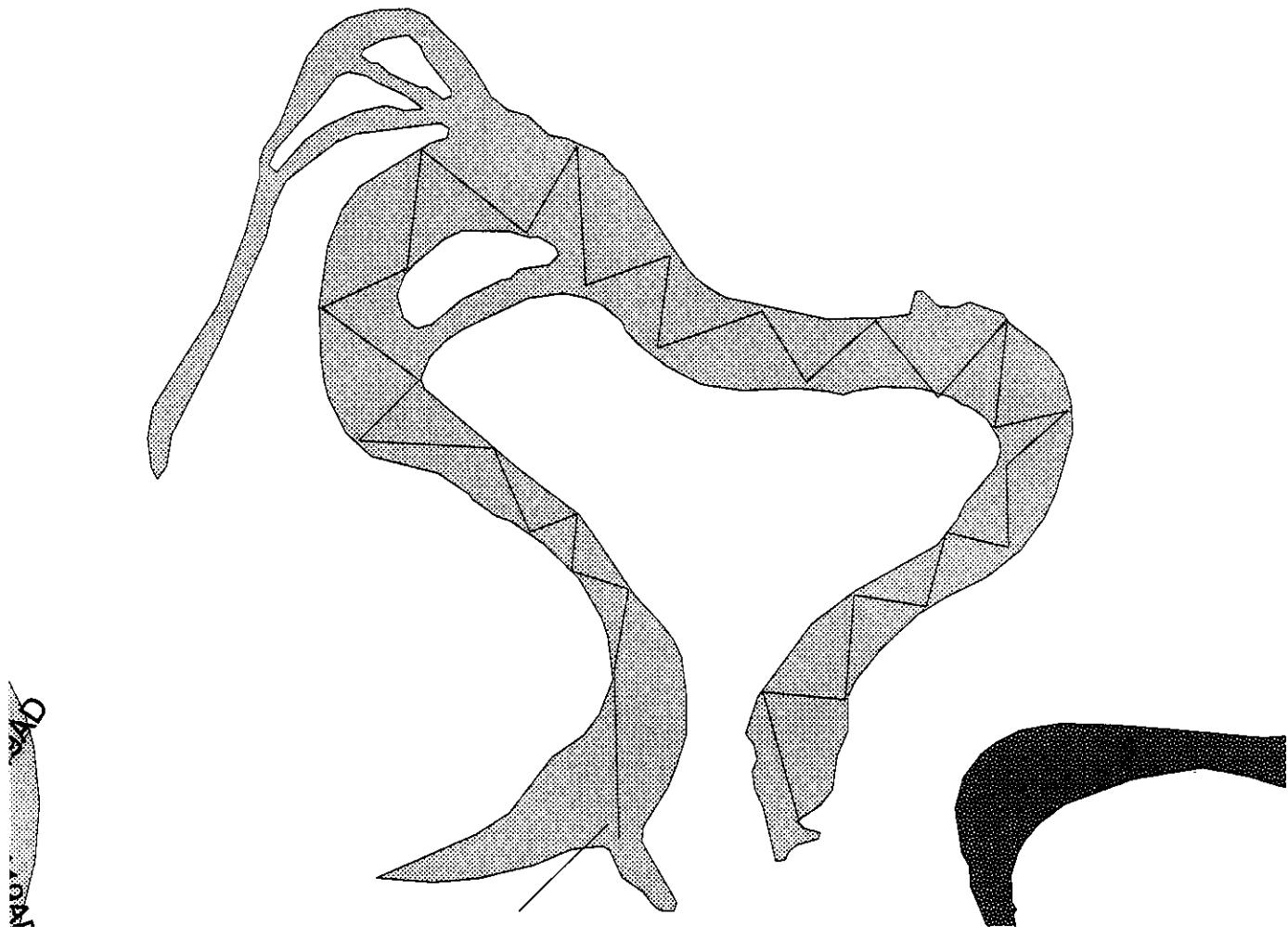








**M9920**



Transect A begins



0      1000      2000      3000 Feet

## Lake M9920

### Other Names:

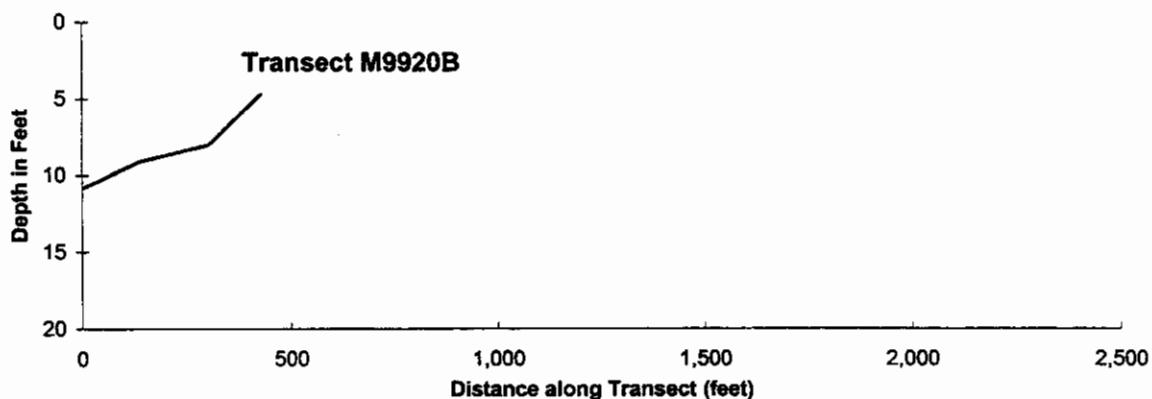
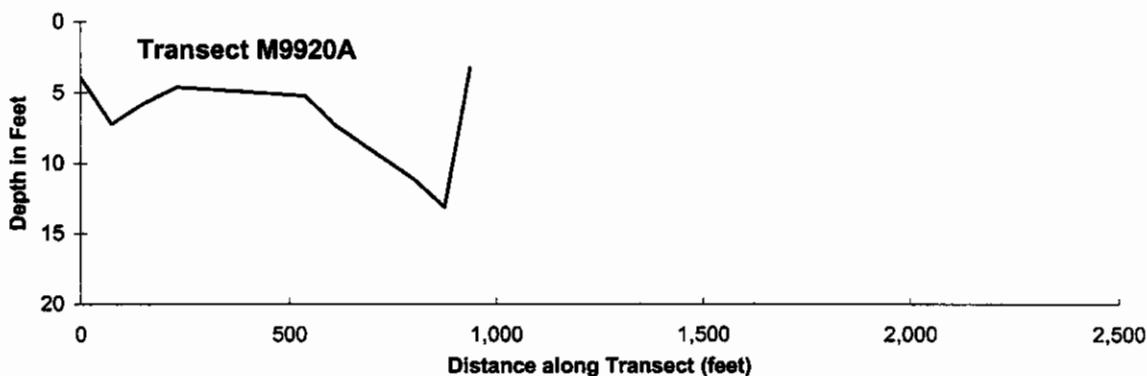
Location: 70°13.40'N 151°51.00'W  
USGS Quad Sheet: Harrison Bay A-4; T10N R1E Sect. 15  
Habitat: Oxbow lake (off Judy Creek)  
Area: 96 acres  
Maximum Depth: 18 feet  
Active Outlet:  
Spec. Conductance: 174  $\mu\text{S}/\text{cm}$   
pH: 8.3  
Calculated Volume: 185.9 million gallons  
Permittable Volume: 17.0 million gallons

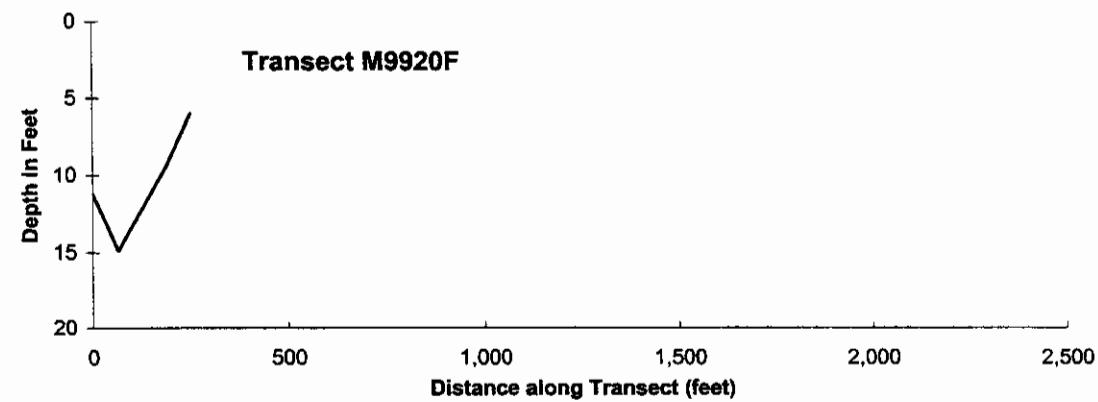
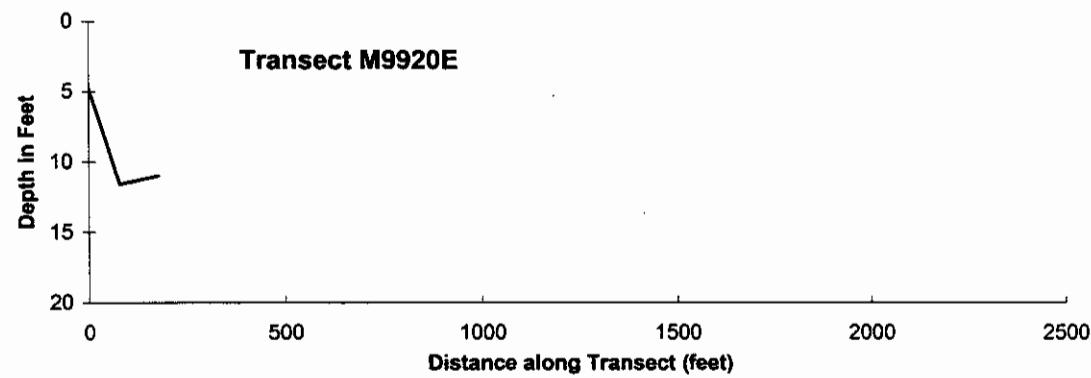
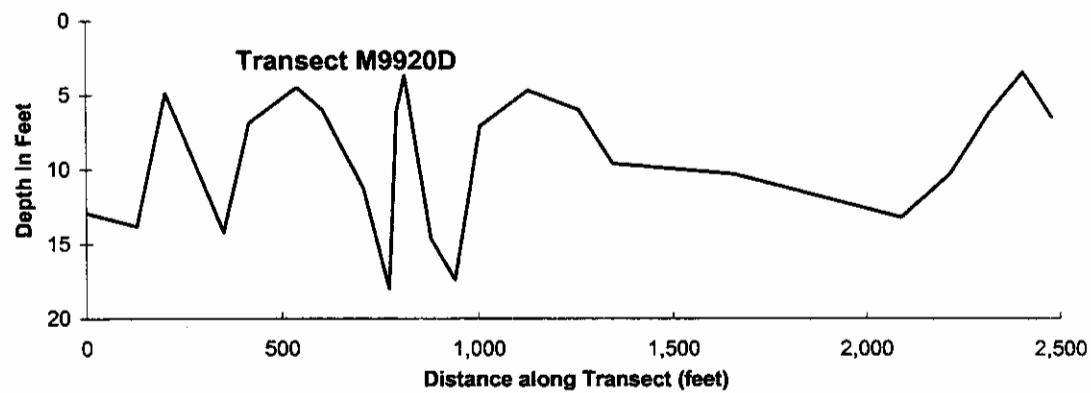
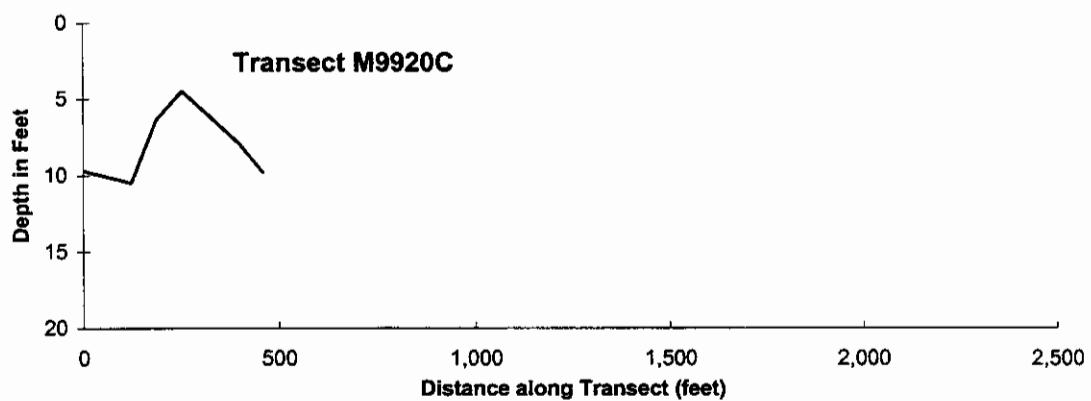
### Water Quality:

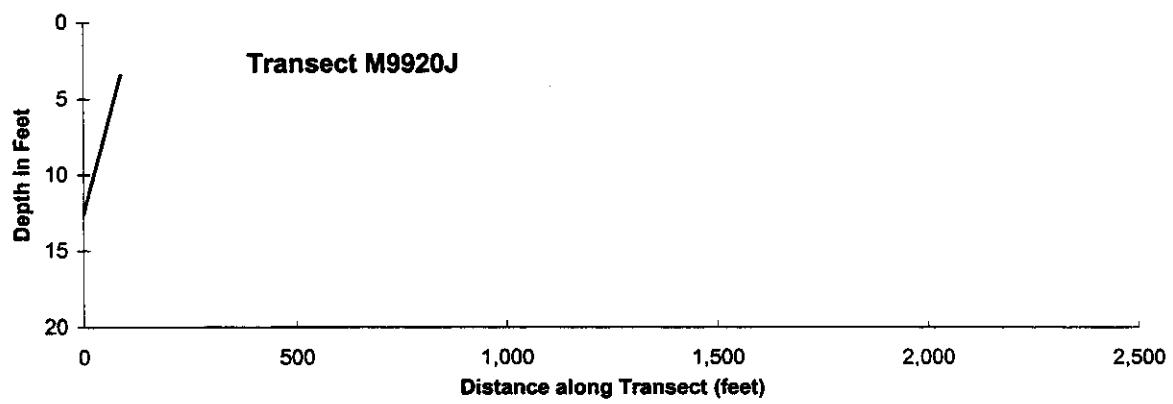
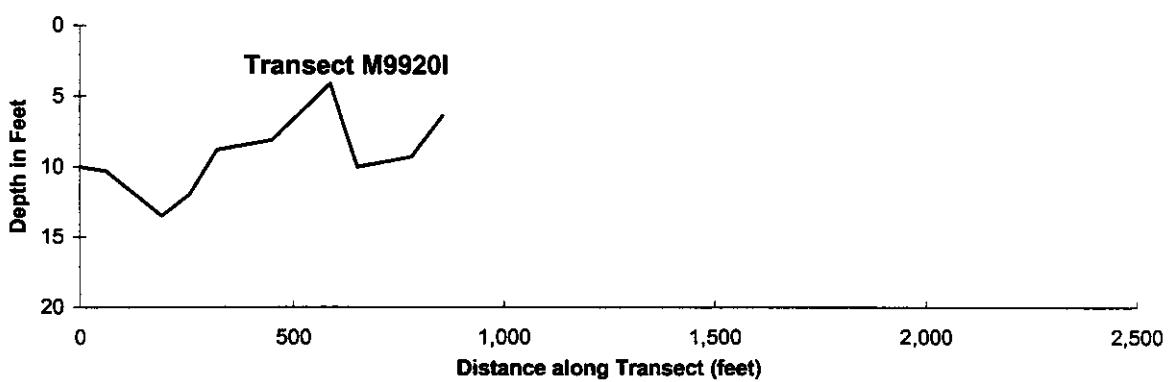
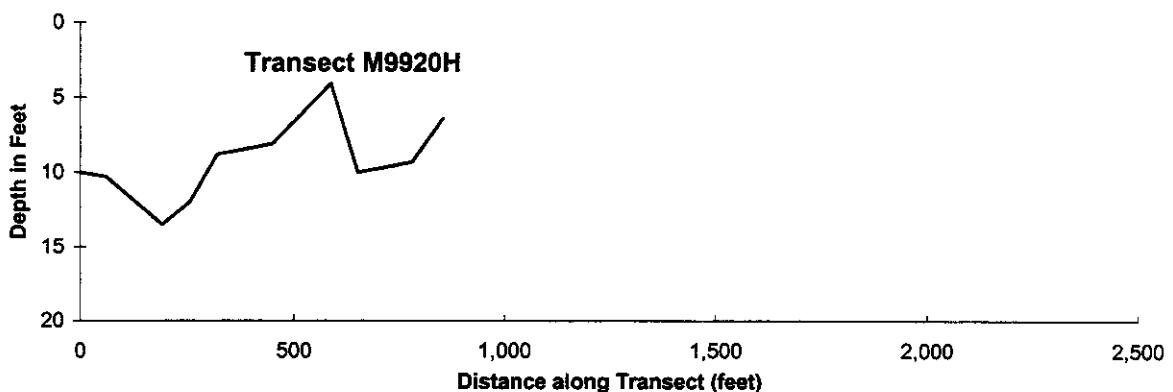
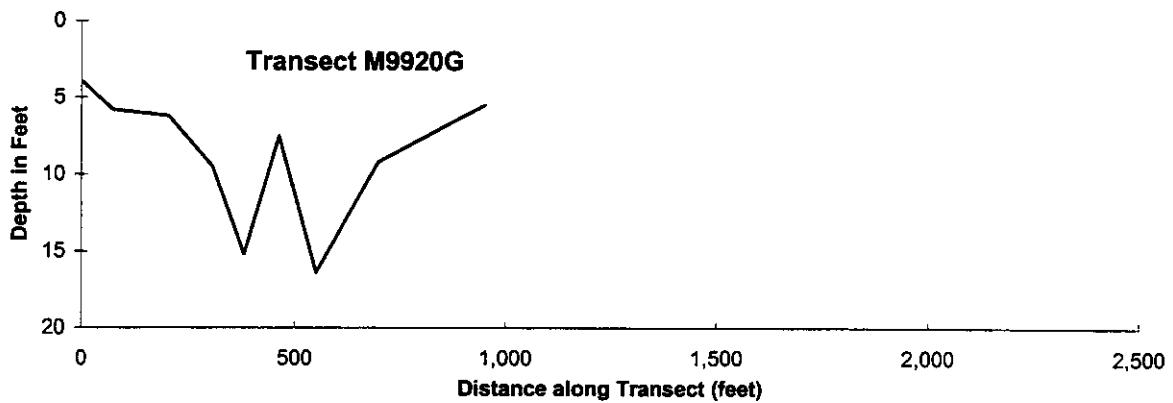
Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	7.67	3.4	25.5	4	81.6	114	this study

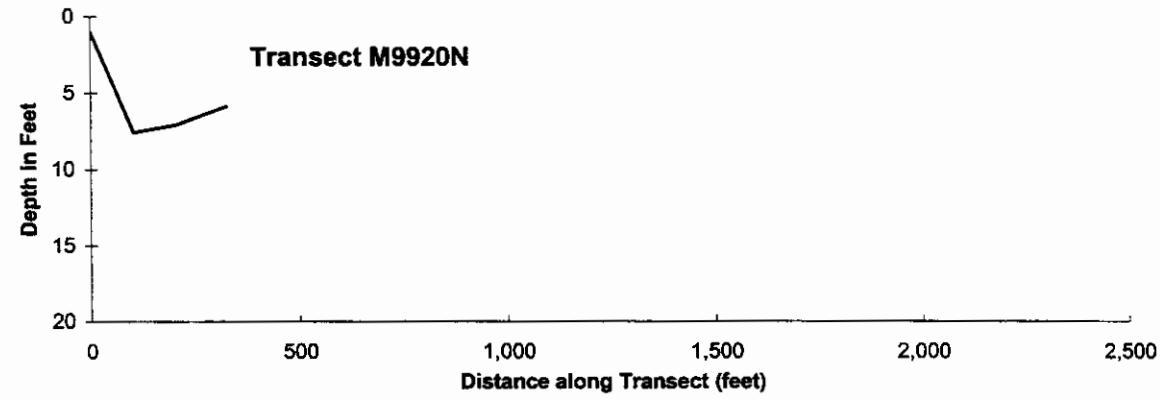
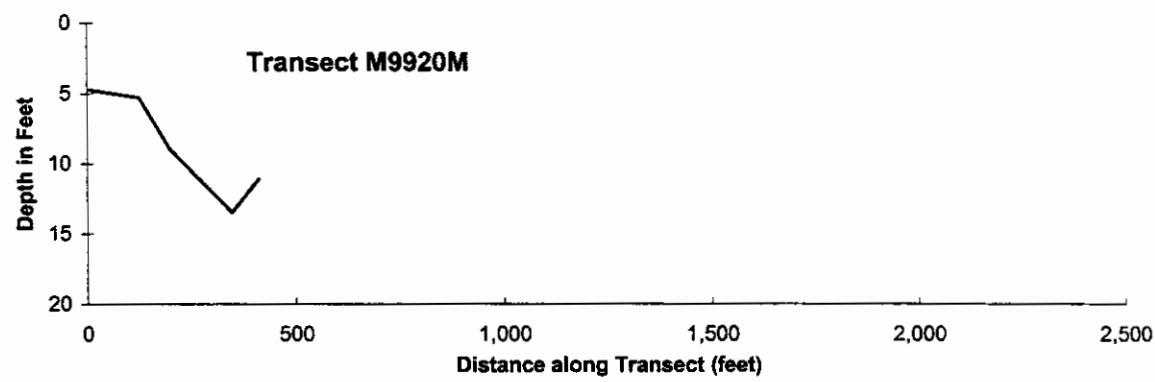
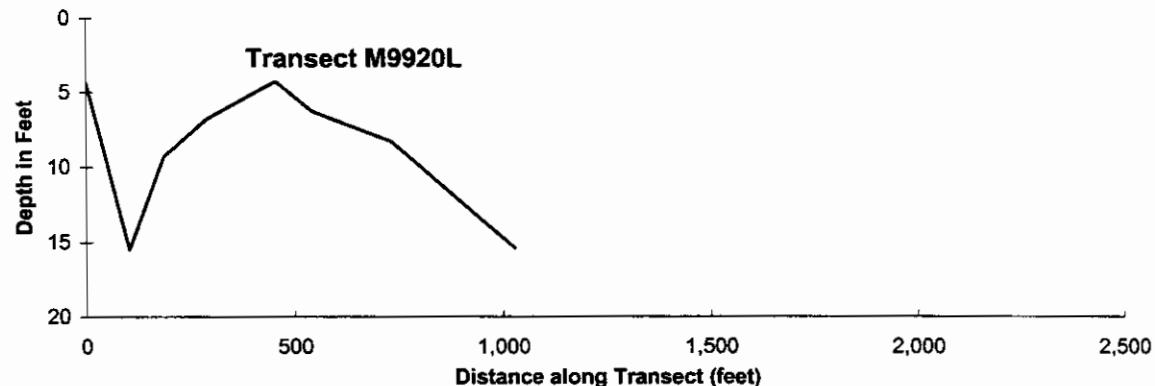
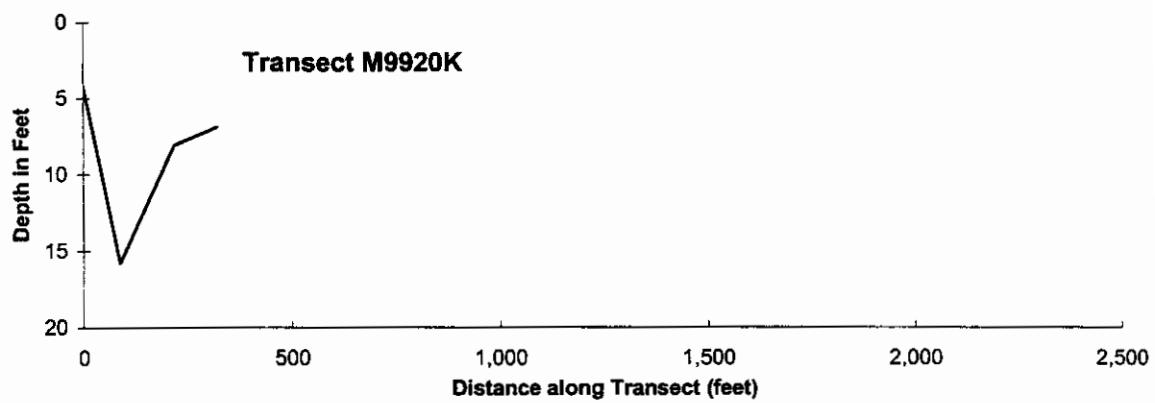
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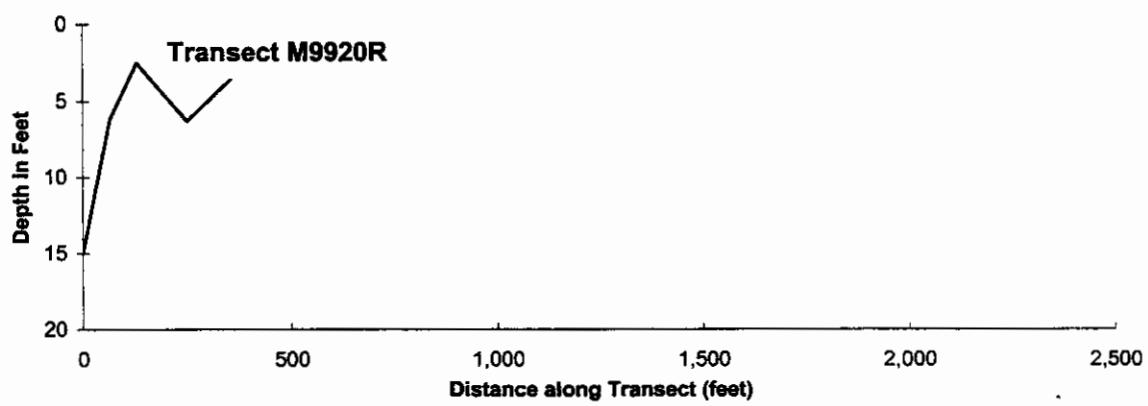
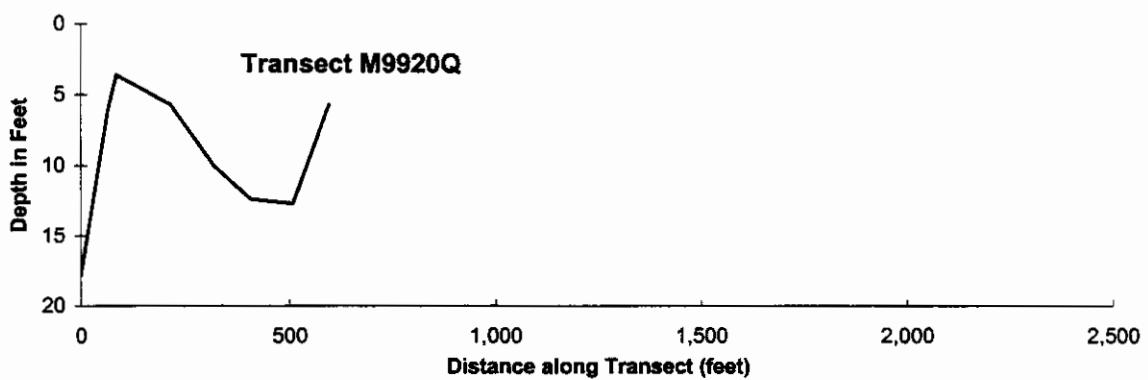
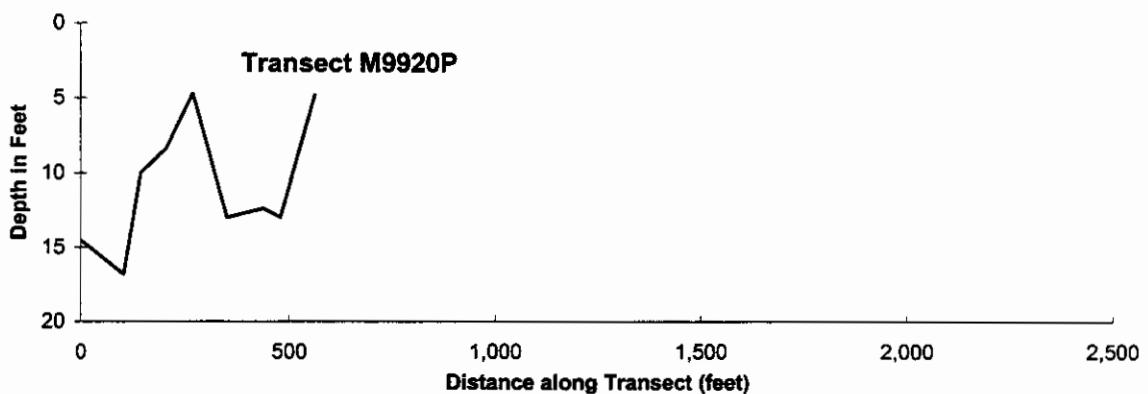
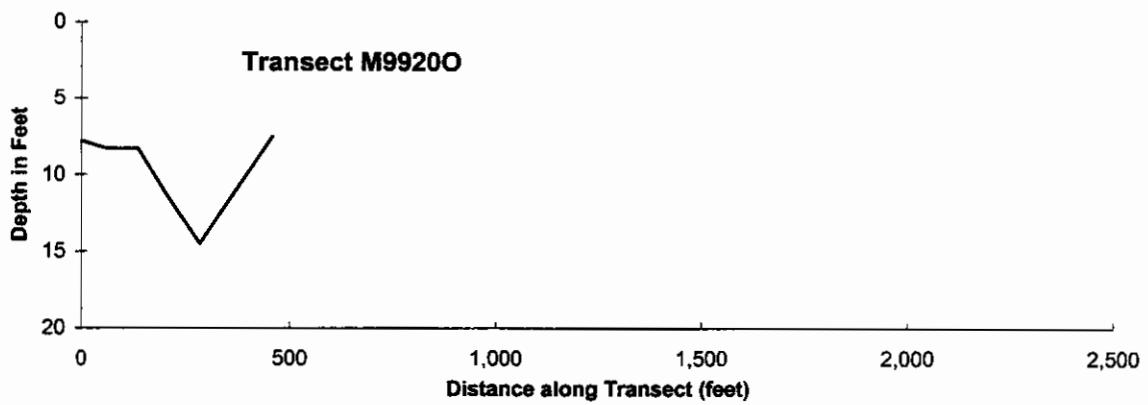
Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 14 99	2.8	None	0

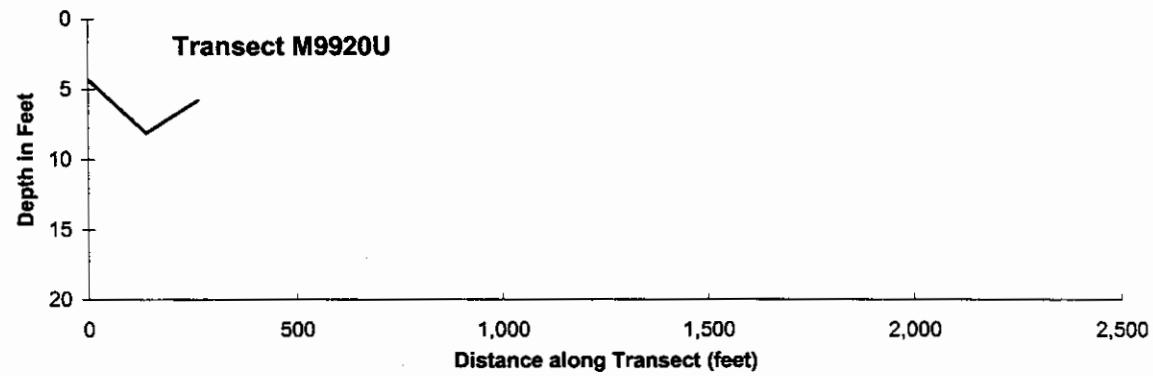
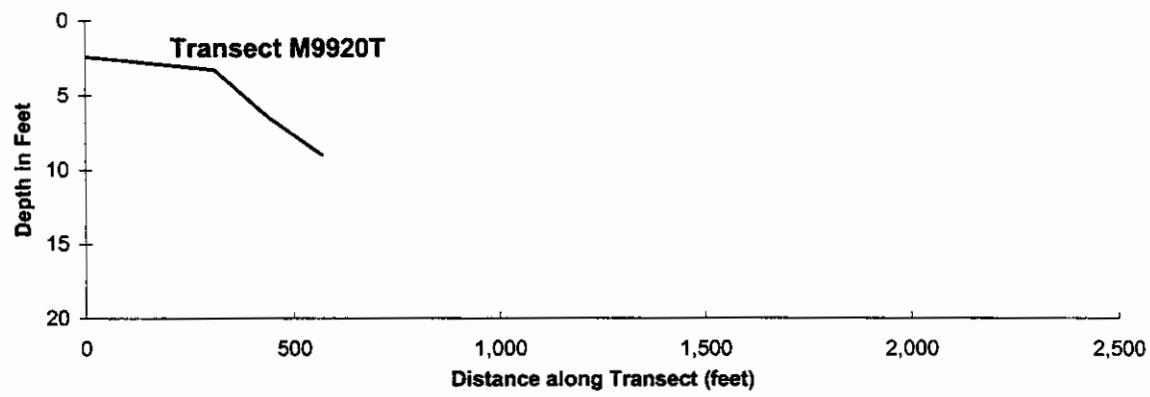
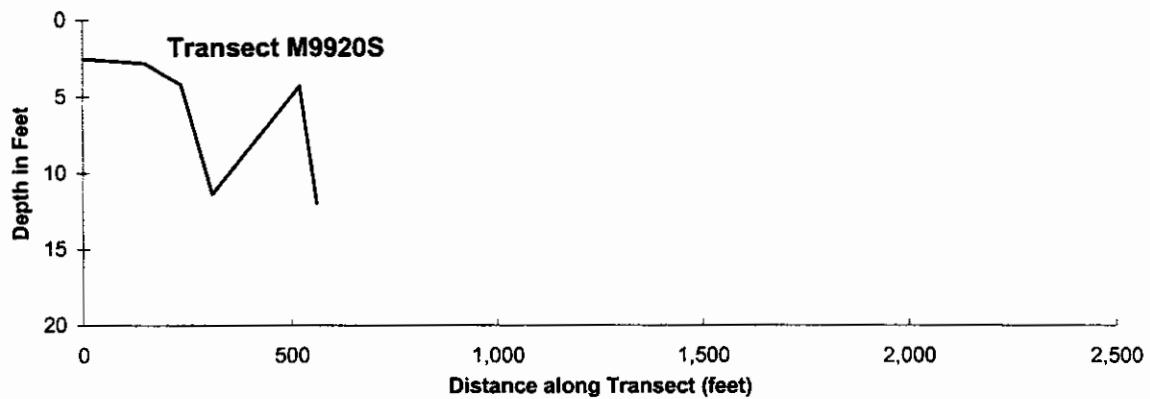






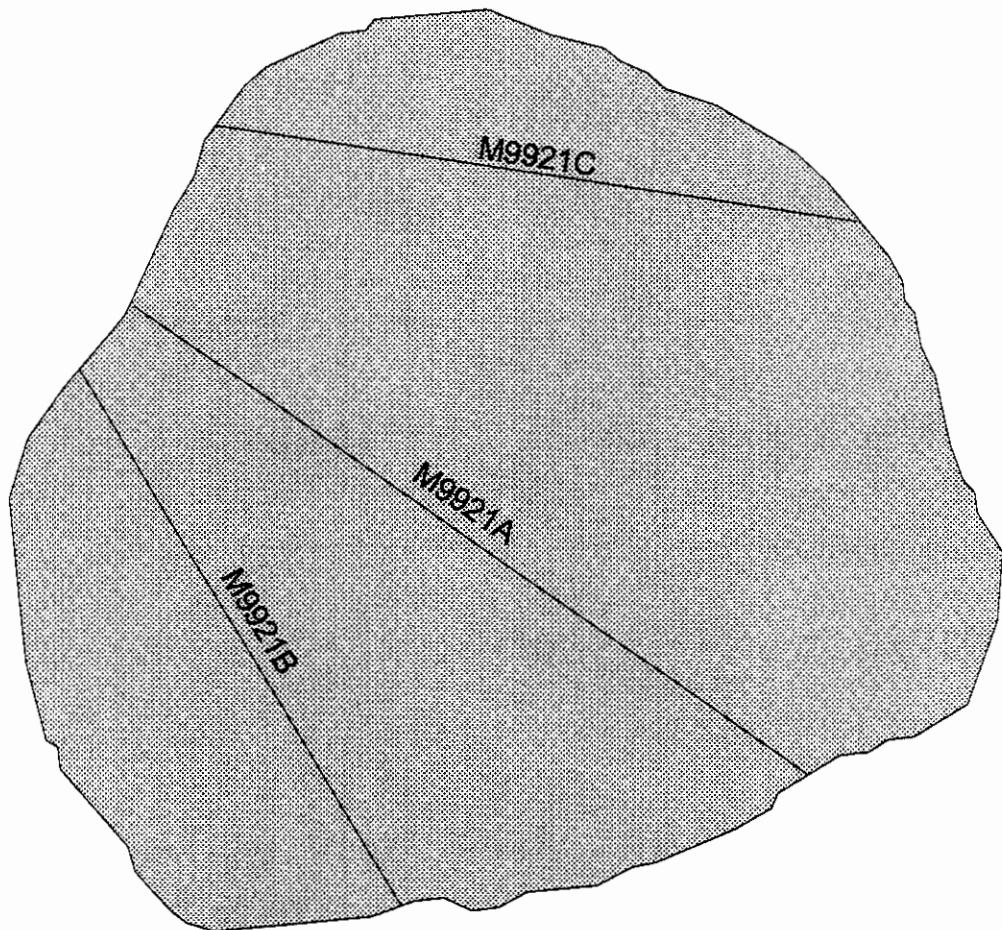








# M9921



0      500      1000      1500      2000 Feet

## Lake M9921

### Other Names:

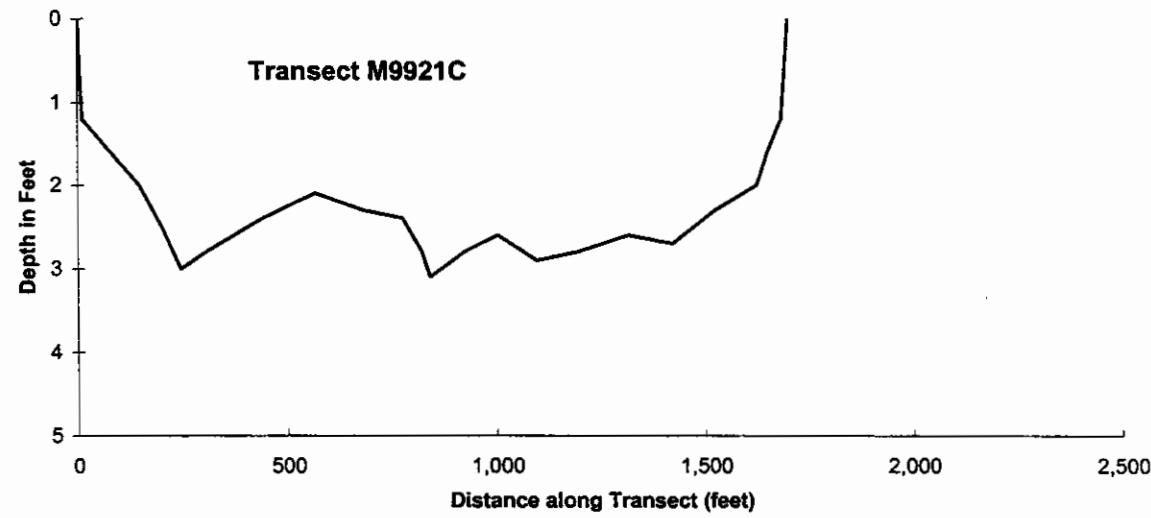
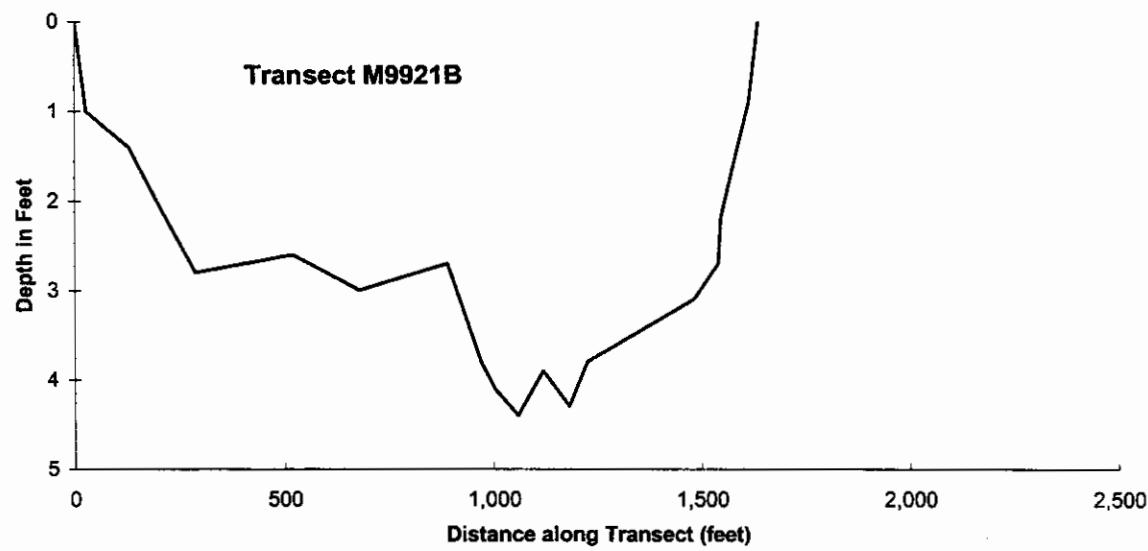
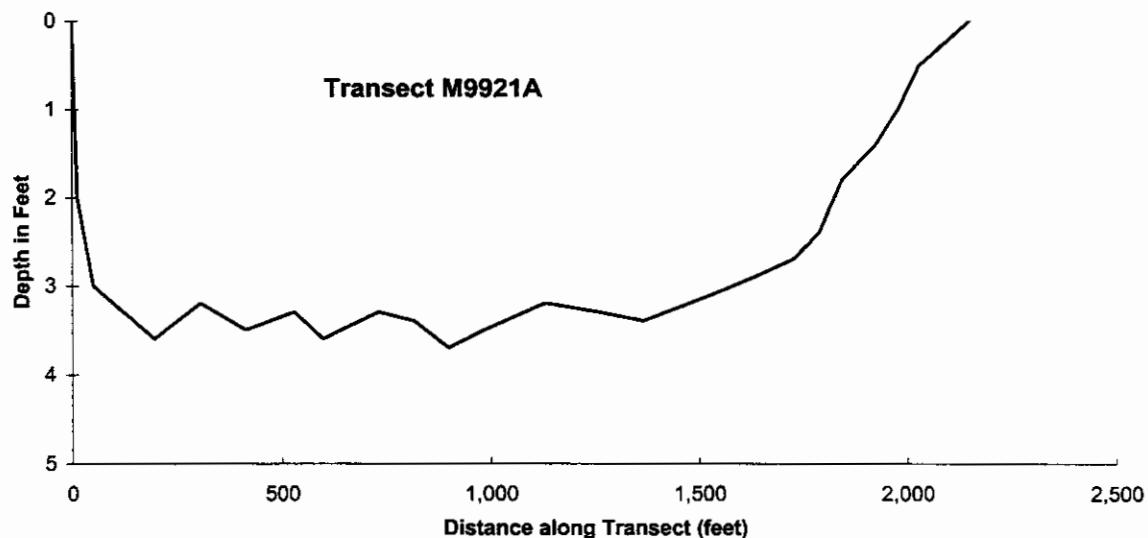
Location: 70°15.90'N 151°38.27'W  
USGS Quad Sheet: Harrison Bay B-3: T11N R2E Sect. 33  
Habitat: Tundra lake  
Area: 108 acres  
Maximum Depth: 4.4 feet  
Active Outlet:  
Spec. Conductance: 196.7  $\mu\text{S}/\text{cm}$   
pH: 8.0  
Calculated Volume: 51.3 million gallons  
Permittable Volume: No fish concern

### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ]	Total Dissolved Solids (mg/l)	Source
1999	27.4	8.6	28.3	5.1	91.6	130	this study

### Catch Record:

Gear	Date	Effort (hours)	Species	Number
				Caught
	Jul 15 99	4.3	None	0



## **Lake M9922**

**Other Names:**

**Location:** 70°13.80'N 151°35.24'W

**USGS Quad Sheet:** Harrison Bay A-3: T10N R2E Sect. 10-11, 14-15

**Habitat:** Tundra lake

**Area:** 191 acres

**Maximum Depth:** 5.3 feet

**Active Outlet:**

**Spec. Conductance:** 136 µS/cm (1985)

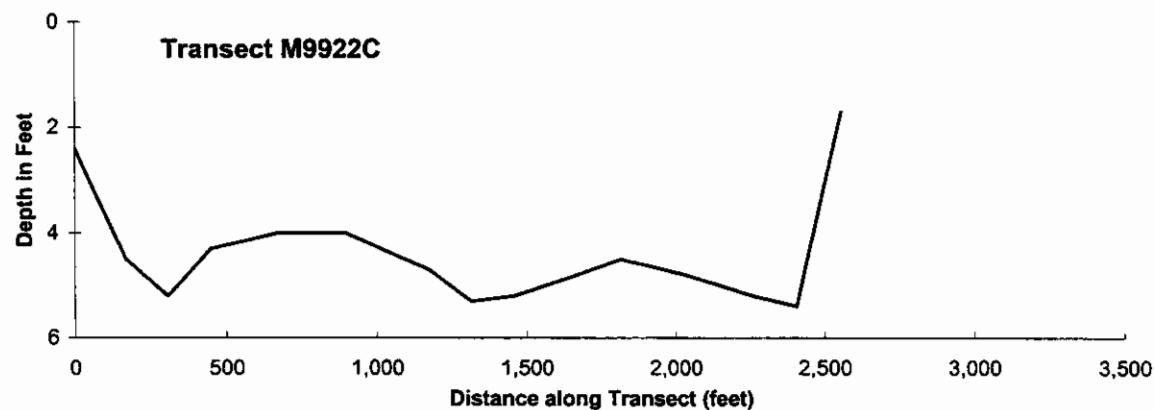
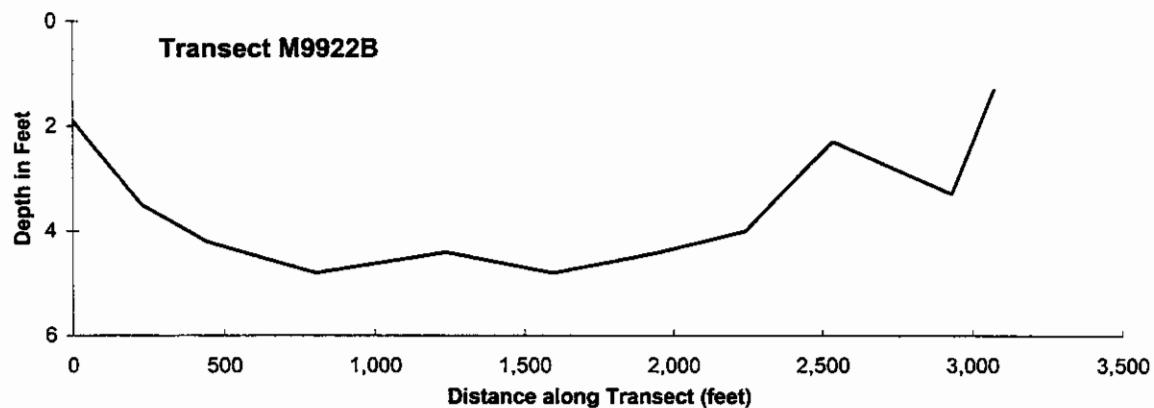
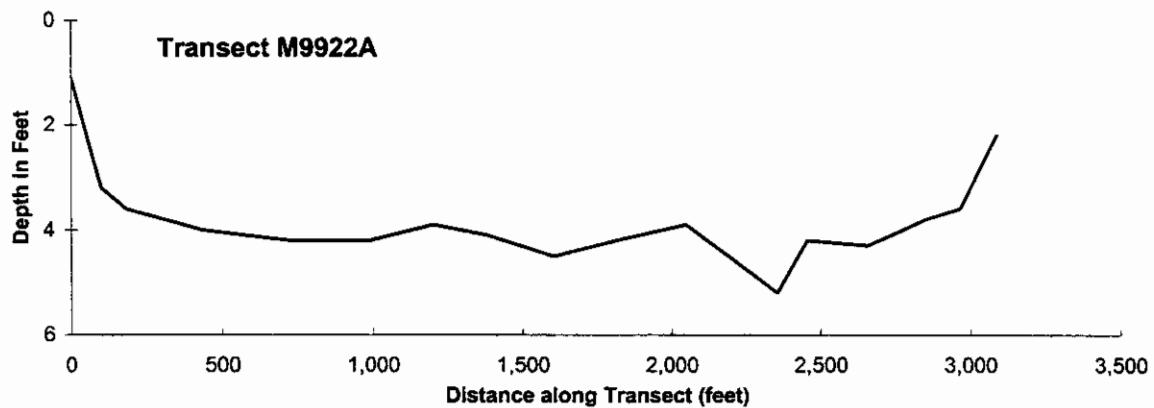
**pH:** 7.8 (1985)

**Calculated Volume:** 108.6 million gallons

**Permittable Volume:** No fish concern

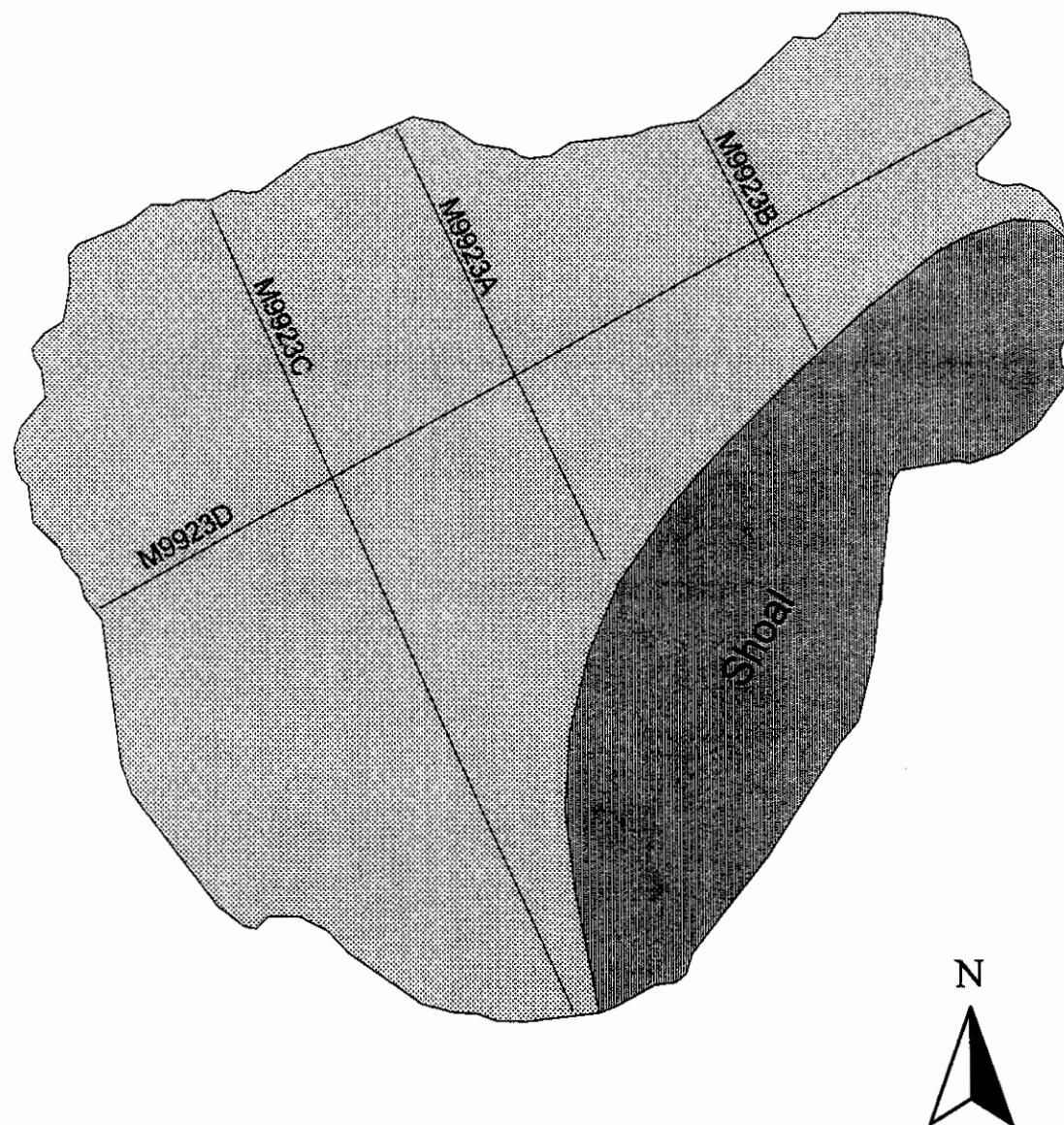
**Water Quality:**

Total	Total
-------	-------





# M9923



0      1000      2000      3000 Feet

**Lake M9923****Other Names:**

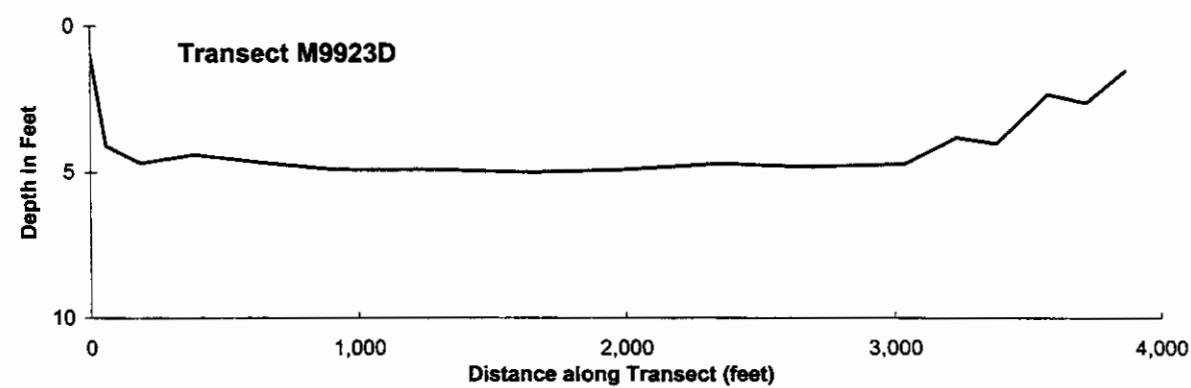
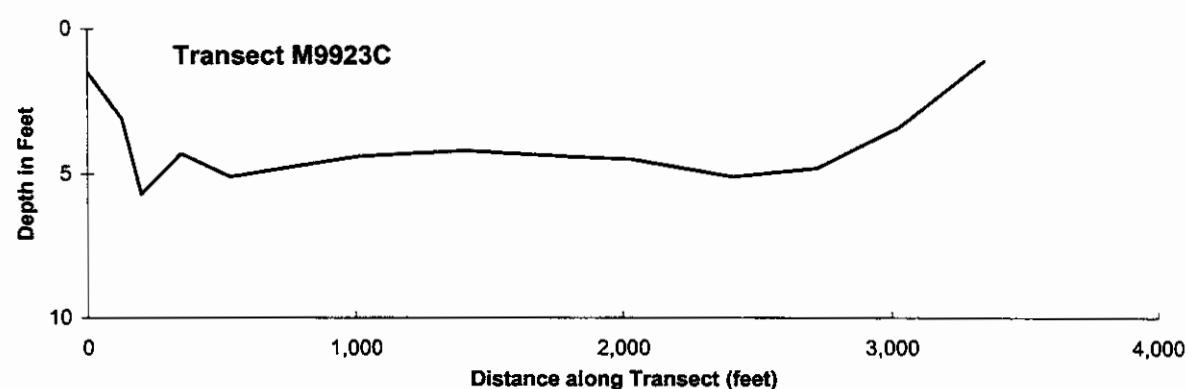
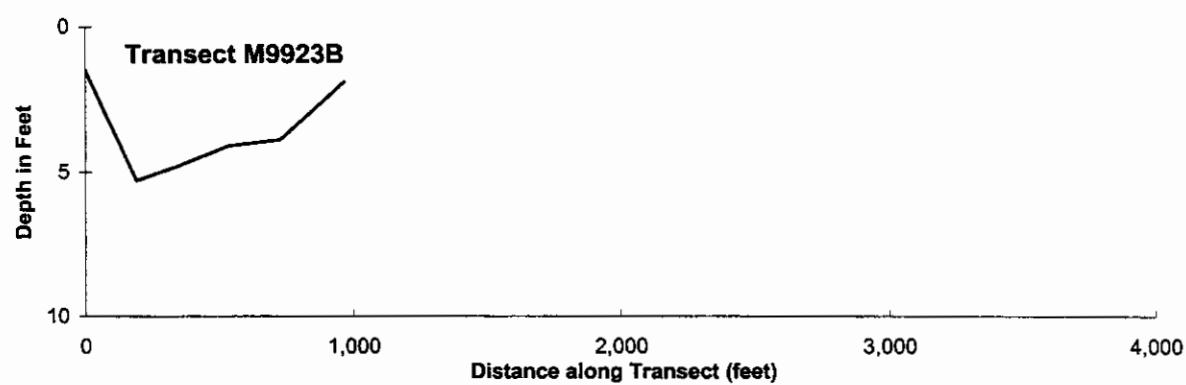
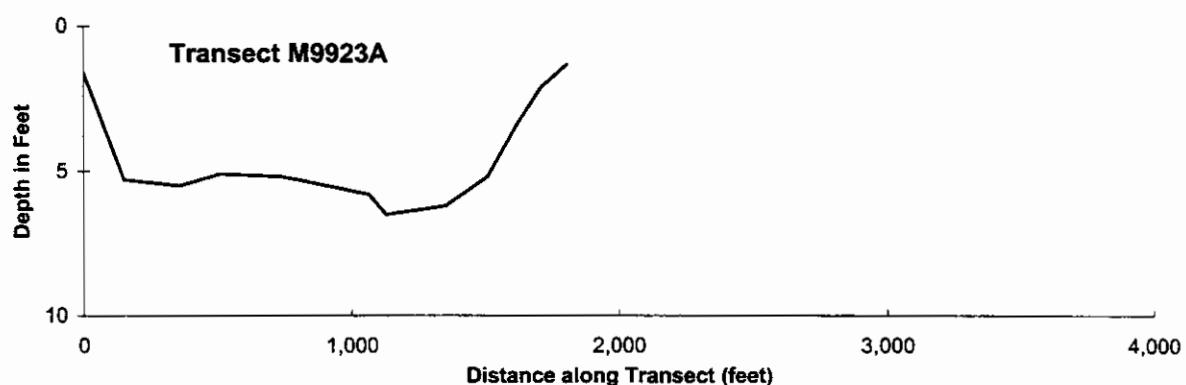
**Location:** 70°13.70'N 151°31.35'W  
**USGS Quad Sheet:** Harrison Bay A-3: T10N R2E Sect. 12-13  
**Habitat:** Tundra lake  
**Area:** 252 acres  
**Maximum Depth:** 6.5 feet  
**Active Outlet:**  
**Spec. Conductance:** 253  $\mu\text{S}/\text{cm}$  (1985)  
**pH:** 8.2 (1985)  
**Calculated Volume:** 175.9 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	24.1	6.8	38.4	6.3	122	140	this study

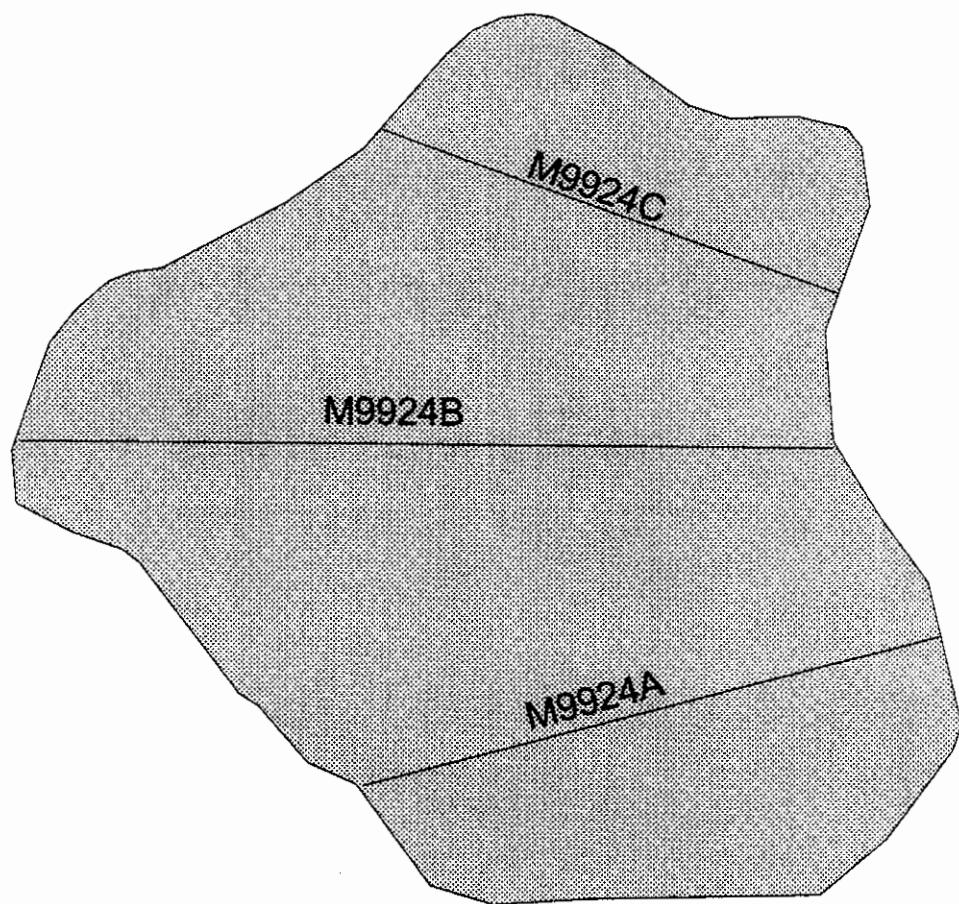
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 17 99	4.0	None	0



**2-153**

# M9924



0      500      1000      1500 Feet

**Lake M9924****Other Names:**

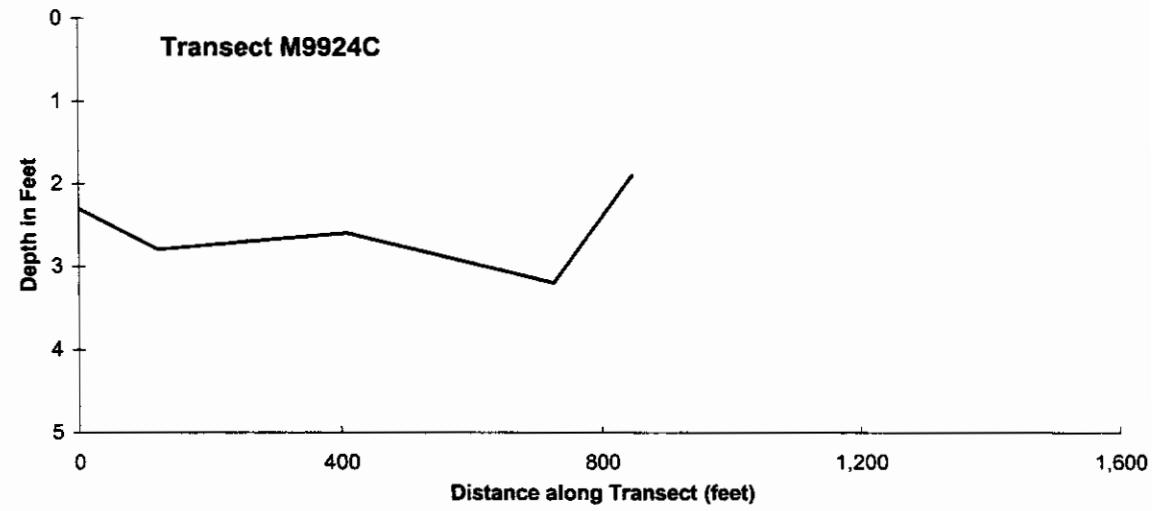
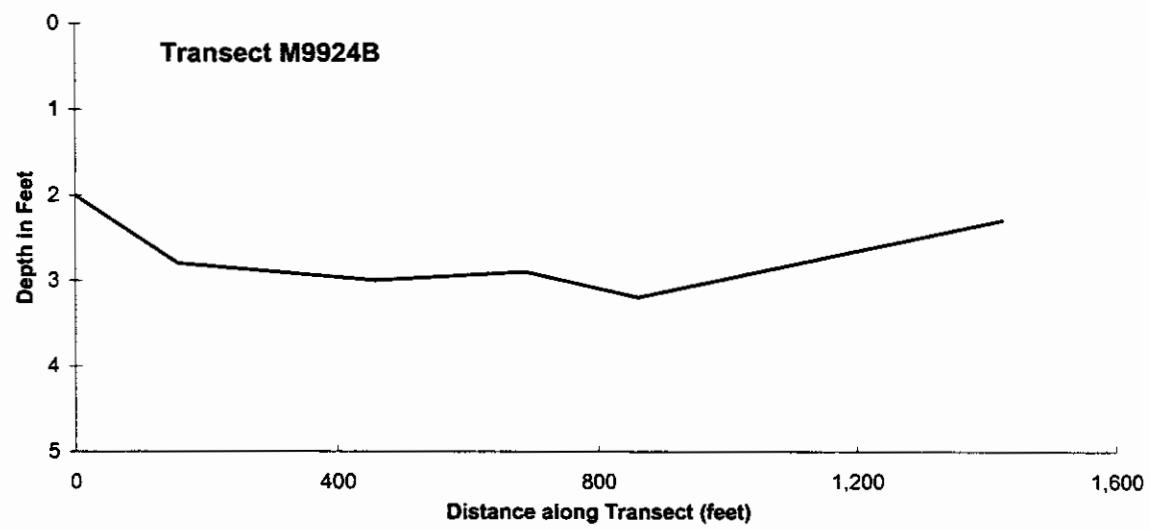
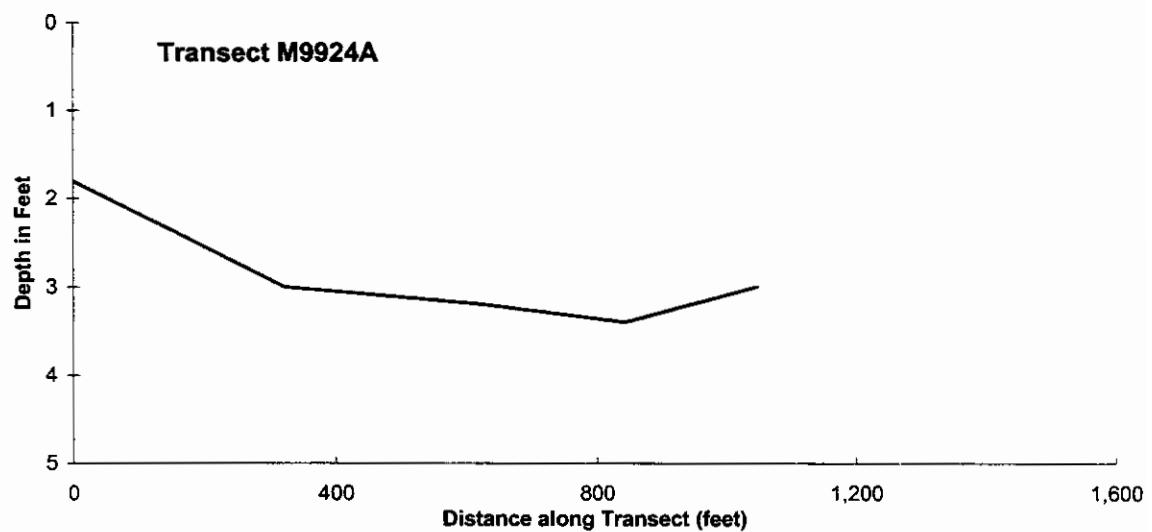
**Location:** 70°15.92'N 151° 30.75'W  
**USGS Quad Sheet:** Harrison Bay B-3: T11N R2E Sect. 36  
**Habitat:** Tundra lake  
**Area:** 48 acres  
**Maximum Depth:** 3.4 feet  
**Active Outlet:**  
**Spec. Conductance:** 186.1  $\mu\text{S}/\text{cm}$   
**pH:** 7.6  
**Calculated Volume:** 17.5 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	22.7	10.5	24.8	4.4	77.3	136	this study

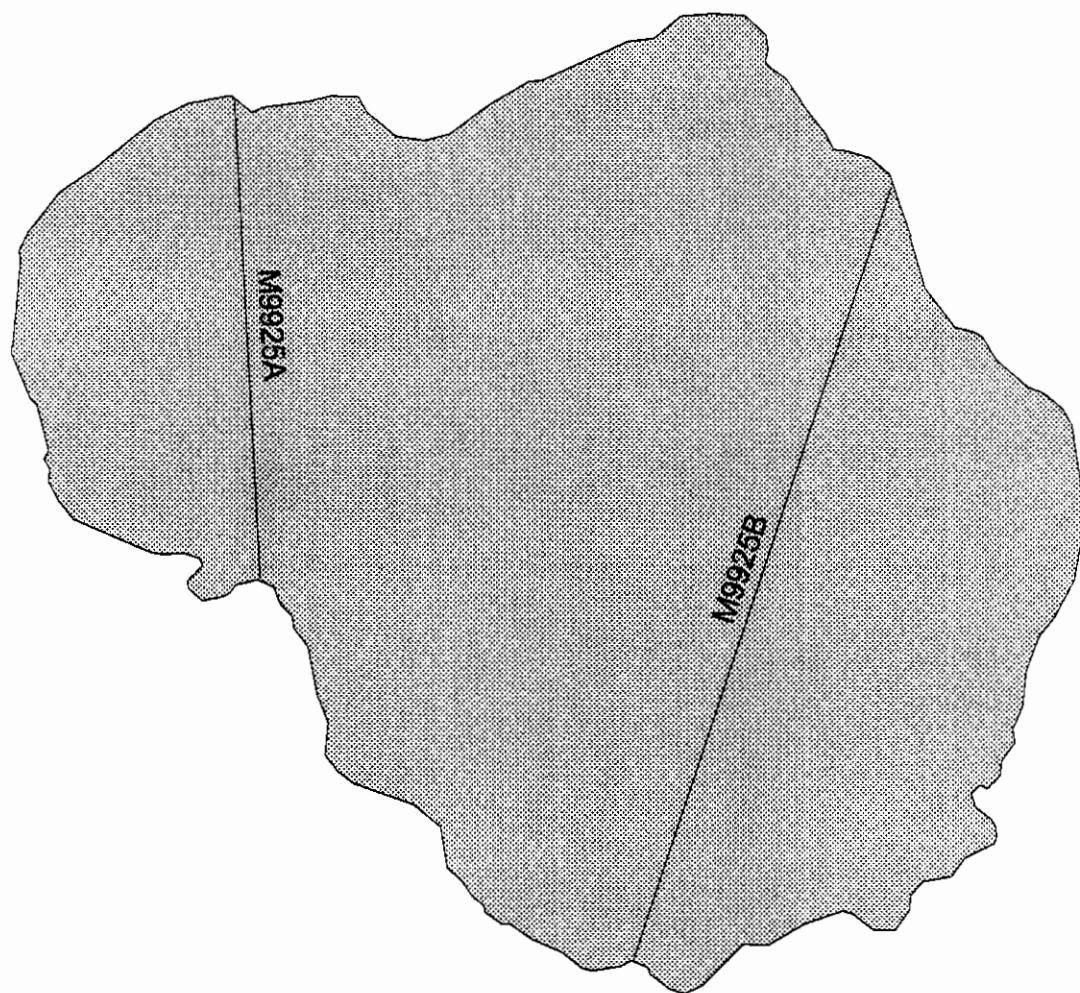
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill net	Jul 18 99	2.2	None	0





# M9925



0 500 1000 1500 2000 2500 3000 Feet



**Lake M9925****Other Names:**

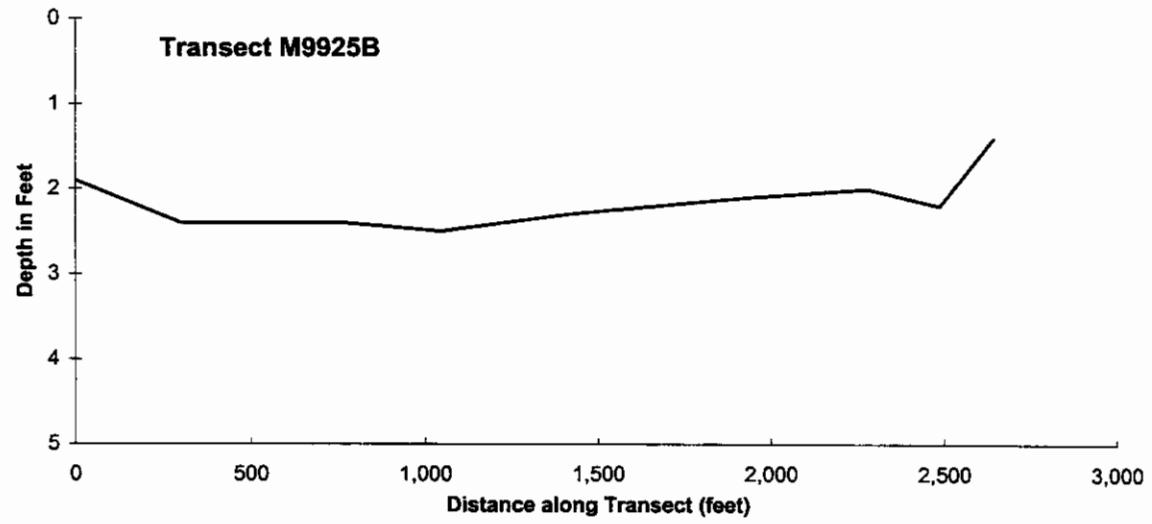
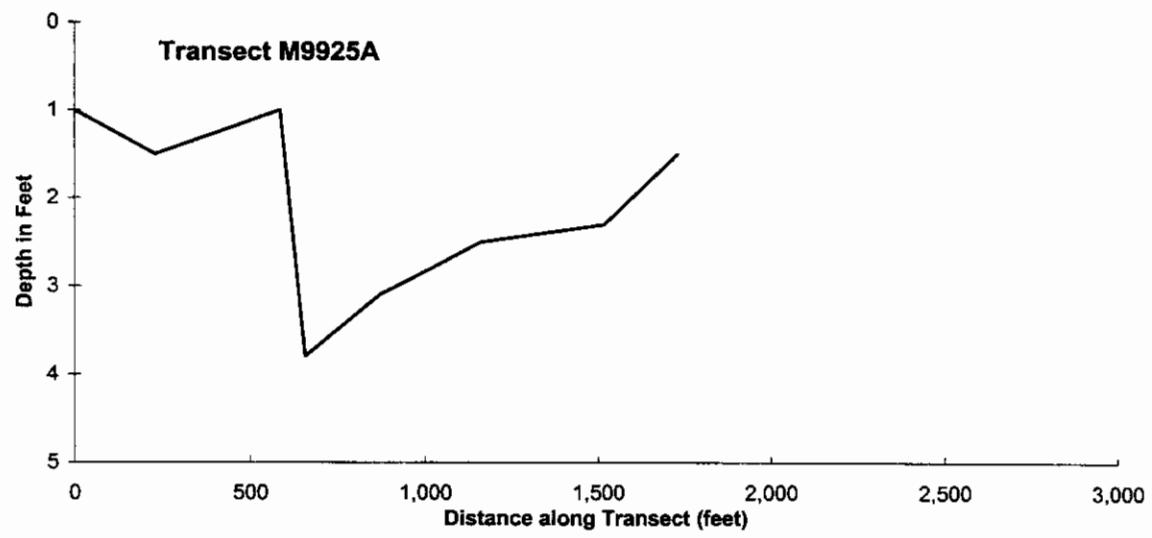
**Location:** 70°14.85'N 151°28.70'W  
**USGS Quad Sheet:** Harrison Bay B-3: T10N R2E Sect. 6  
**Habitat:** Tundra lake  
**Area:** 218 acres  
**Maximum Depth:** 3.9 feet  
**Active Outlet:**  
**Spec. Conductance:** 275.5  $\mu\text{S}/\text{cm}$   
**pH:** 8.1  
**Calculated Volume:** 91.4 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	37.8	11.1	40.2	6.2	122	194	this study

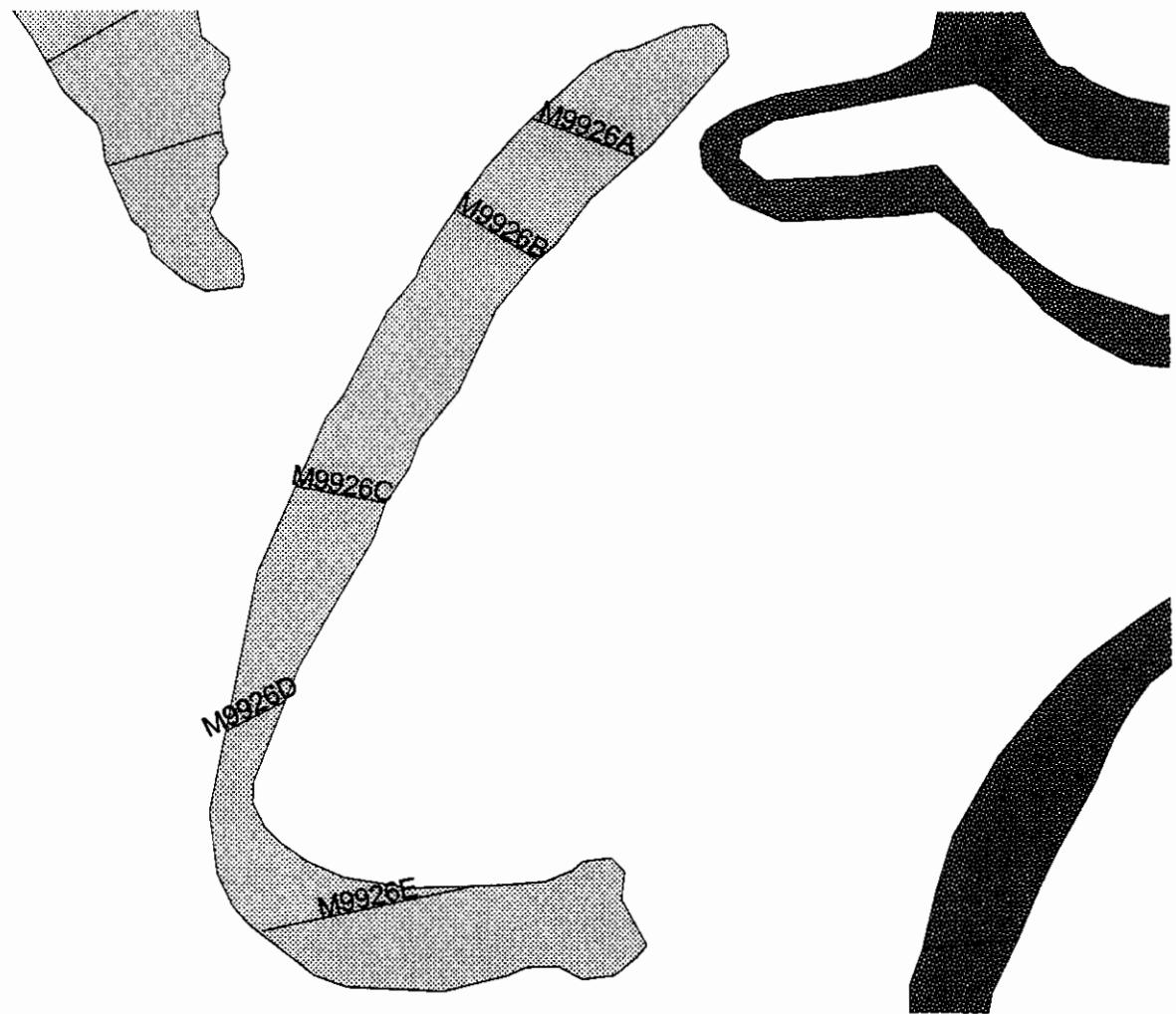
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill net	Jul 18 99	6.4	None	0





# M9926



0 500 1000 1500 2000 2500 Feet

**Lake M9926****Other Names:**

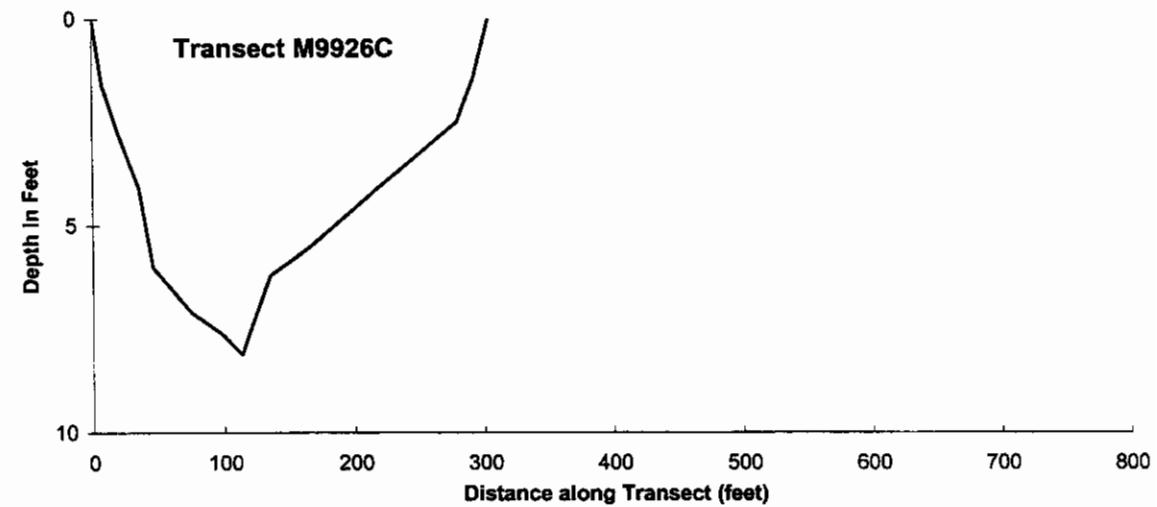
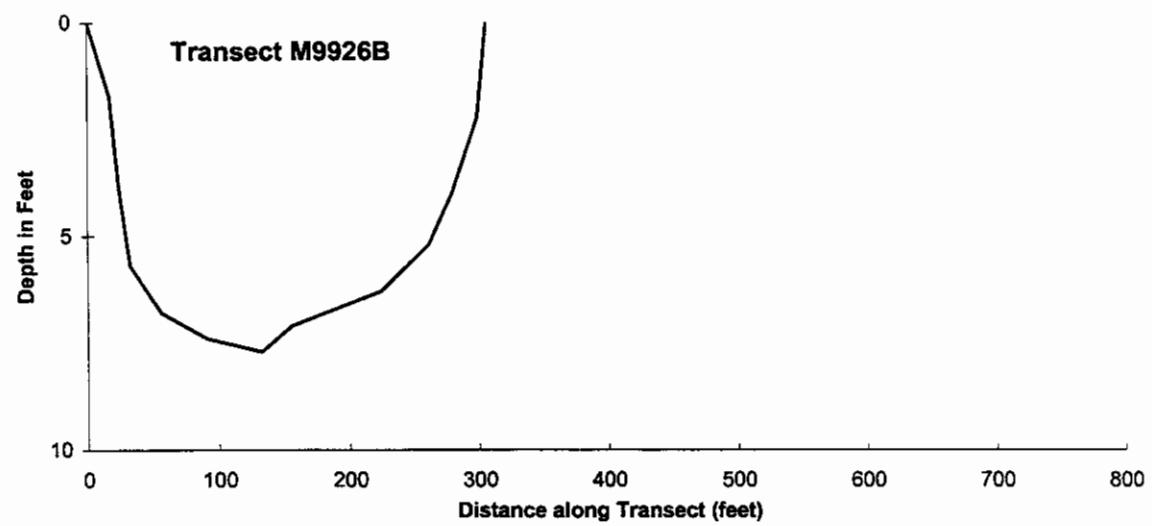
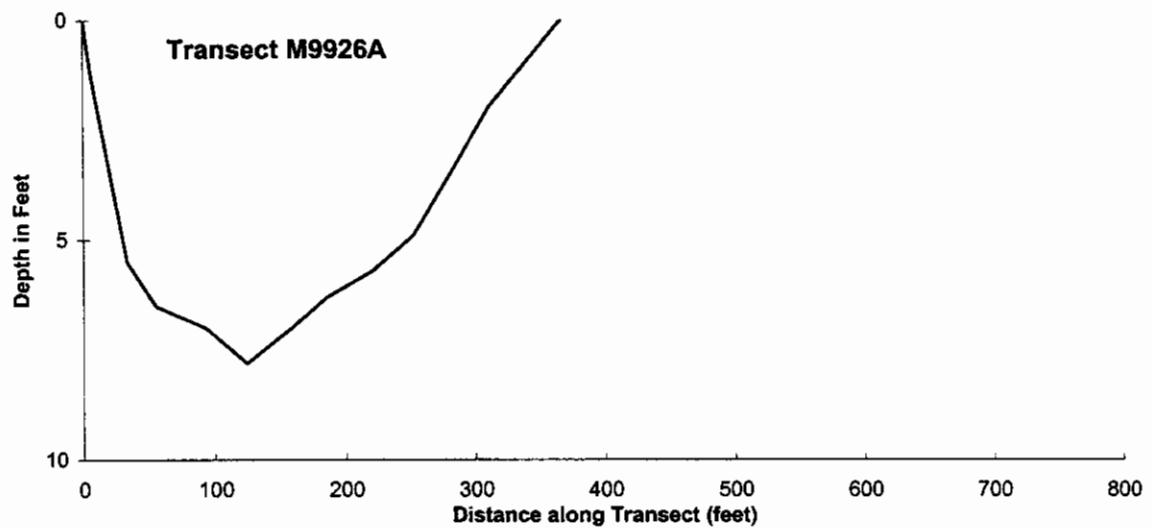
**Location:** 70°15.38'N 151°47.33'W  
**USGS Quad Sheet:** Harrison Bay B-3: T10N R1E Sect. 1  
**Habitat:** Oxbow lake (off Judy Creek)  
**Area:** 32 acres  
**Maximum Depth:** 8.1 feet  
**Active Outlet:**  
**Spec. Conductance:** 166.9  $\mu\text{S}/\text{cm}$   
**pH:** 8.4  
**Calculated Volume:** 27.5 million gallons  
**Permittable Volume:** 0.6 million gallons

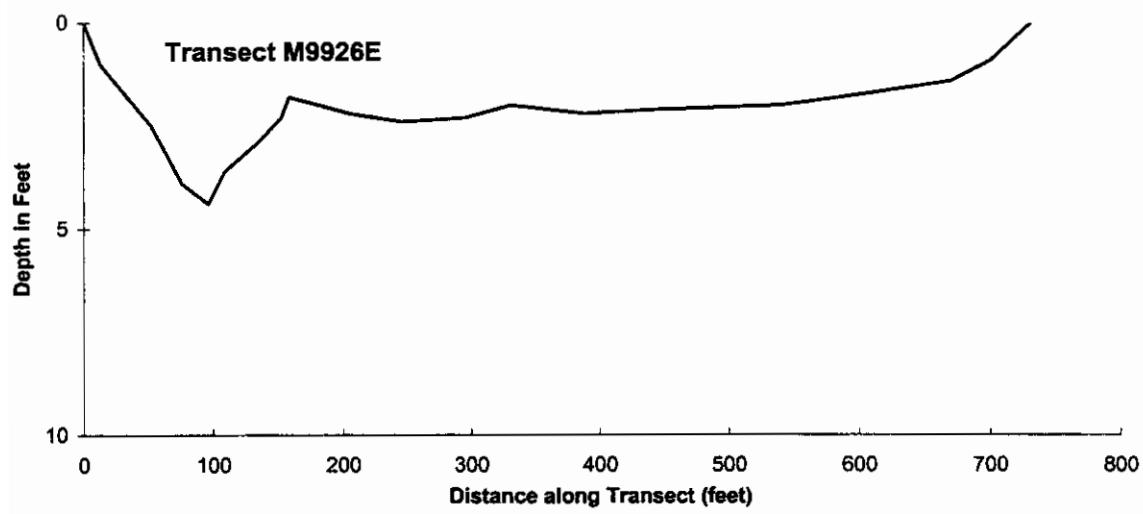
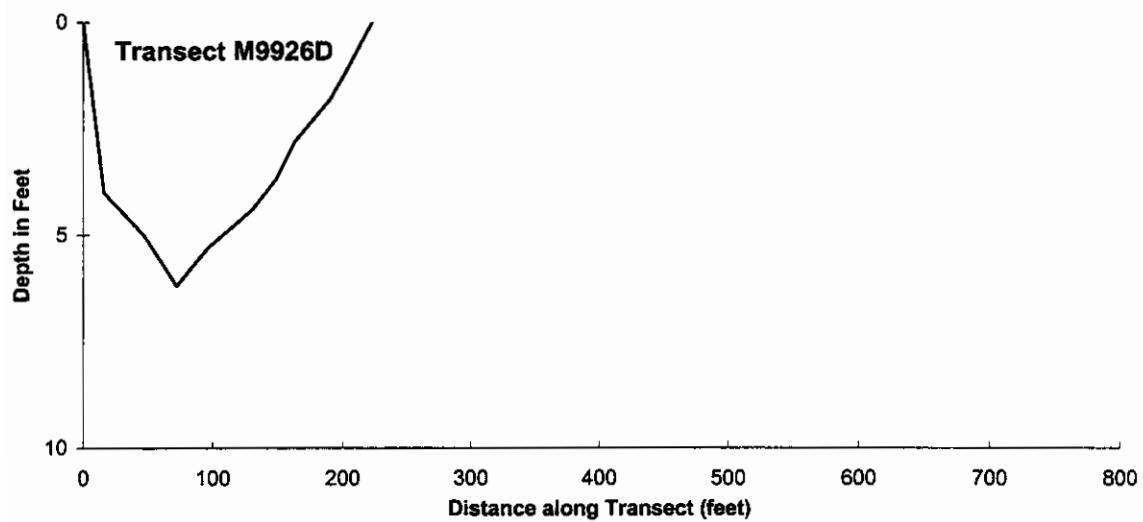
**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	8.98	4.5	23.8	5	132	84	this study

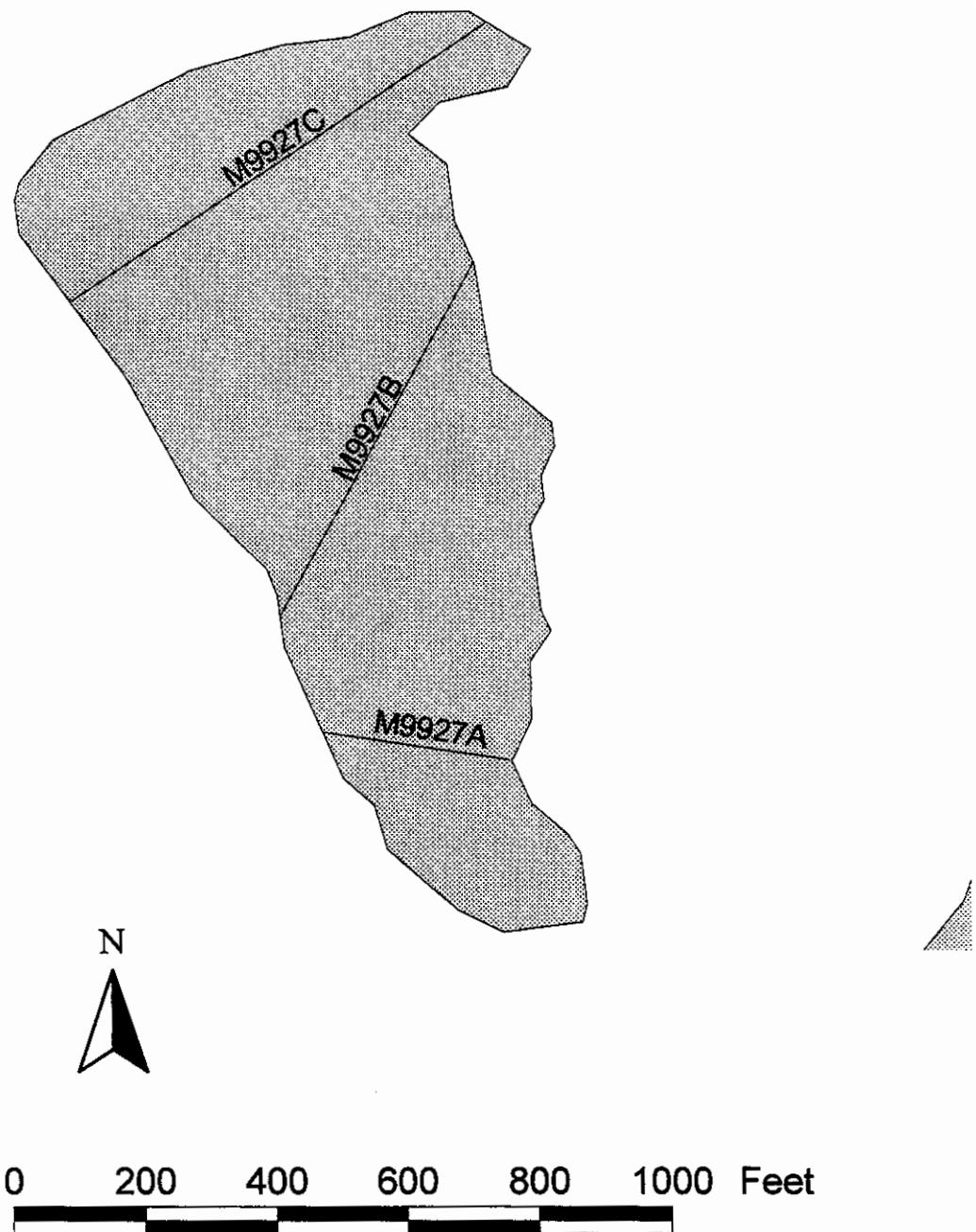
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 20 99	5.2	None	0





# M9927



**Lake M9927****Other Names:**

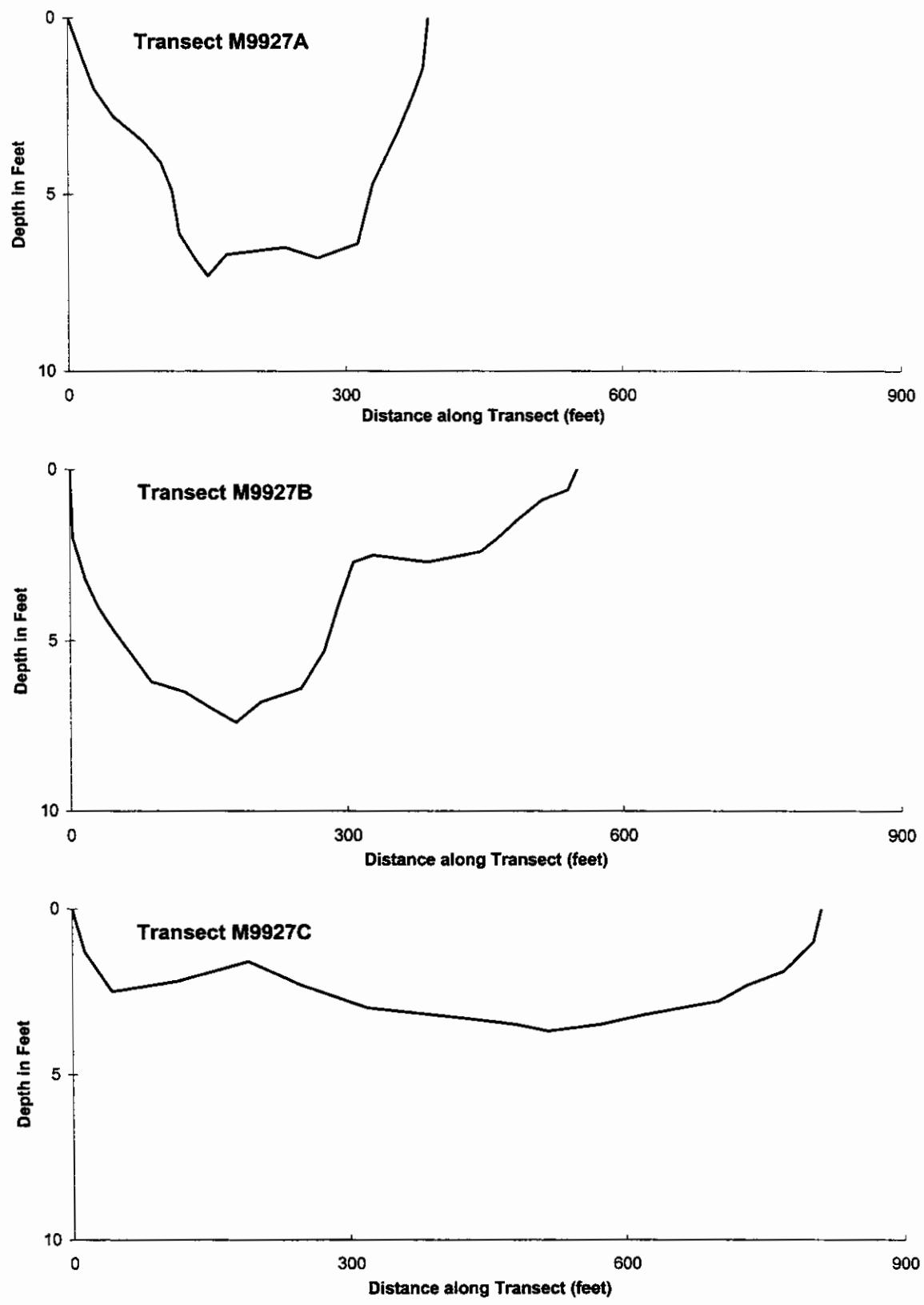
**Location:** 70°15.56'N 151° 47.80'W  
**USGS Quad Sheet:** Harrison Bay B-3: T11N R1E Sect. 35  
**Habitat:** Perched lake (?)  
**Area:** 15 acres  
**Maximum Depth:** 7.4 feet  
**Active Outlet:**  
**Spec. Conductance:** 237.1  $\mu\text{S}/\text{cm}$   
**pH:** 8.6  
**Calculated Volume:** 11.9 million gallons  
**Permittable Volume:** 0.1 million gallons

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	19.8	9.7	29	8.8	102	136	this study

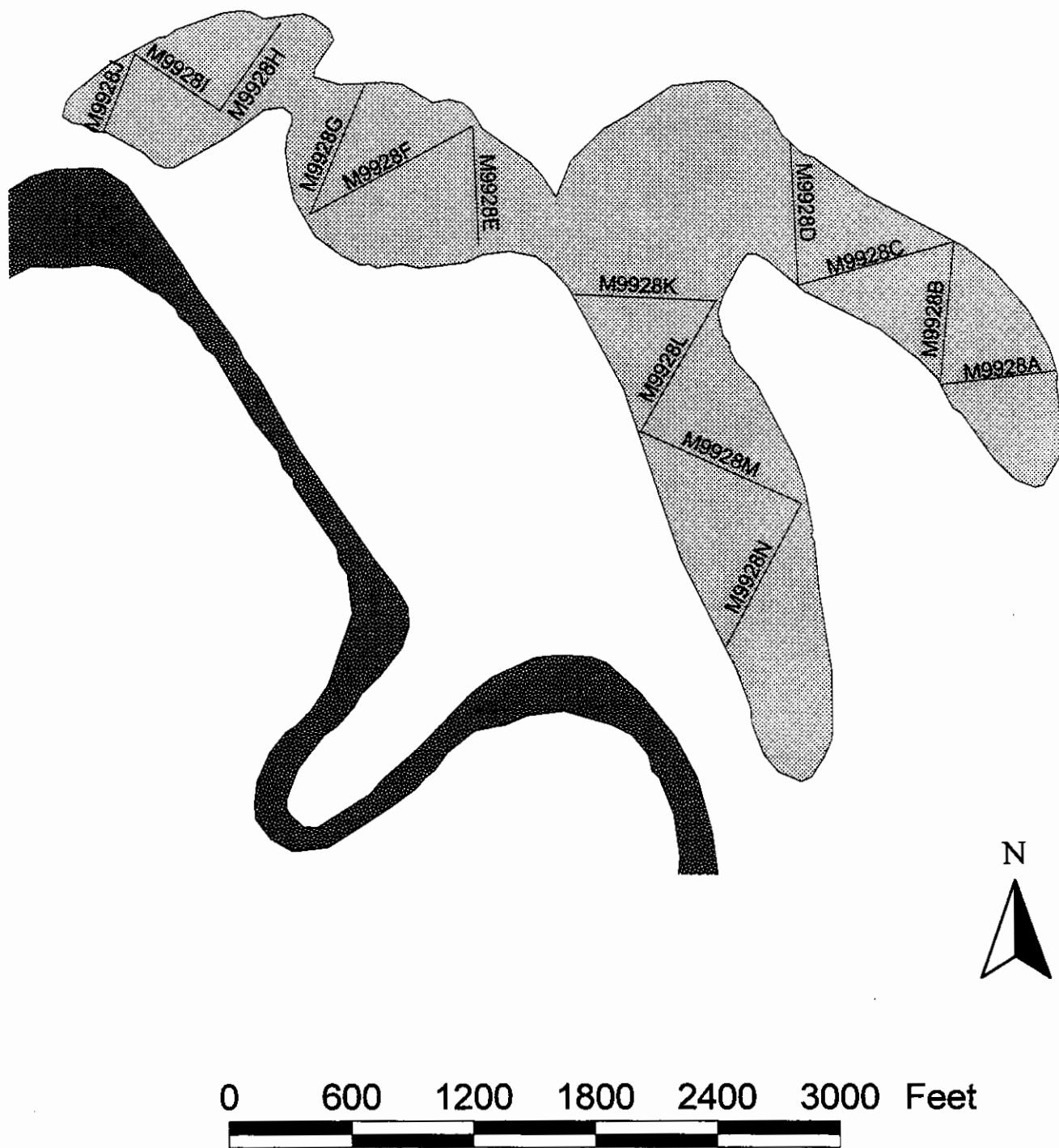
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gillnet	Jul 20 99	5.2	None	0





# M9928



## Lake M9928

### Other Names:

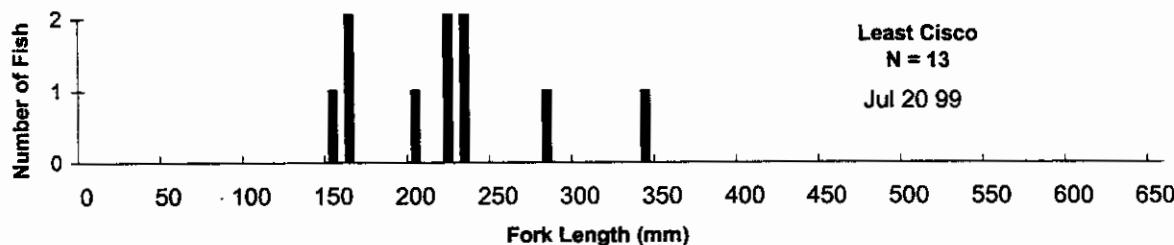
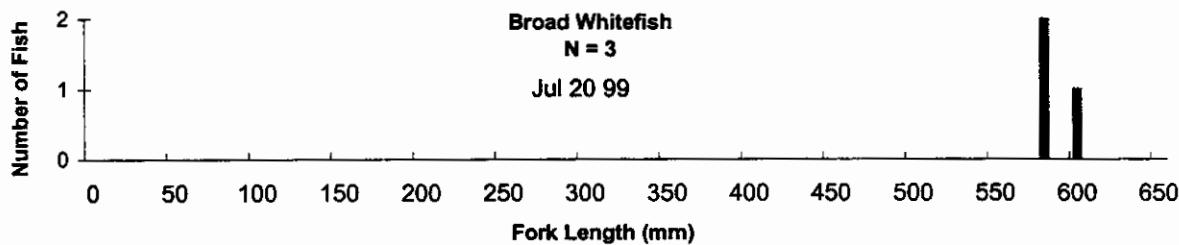
Location: 70°16.06'N 151°46.30'W  
USGS Quad Sheet: Harrison Bay B-3: T11N R1E Sect. 36  
Habitat: Oxbow lake (off Fish Creek)  
Area: 112 acres  
Maximum Depth: 18.5 feet  
Active Outlet:  
Spec. Conductance: 121  $\mu\text{S}/\text{cm}$   
pH: 8.0  
Calculated Volume: 222.4 million gallons  
Permittable Volume: 20.7 million gallons

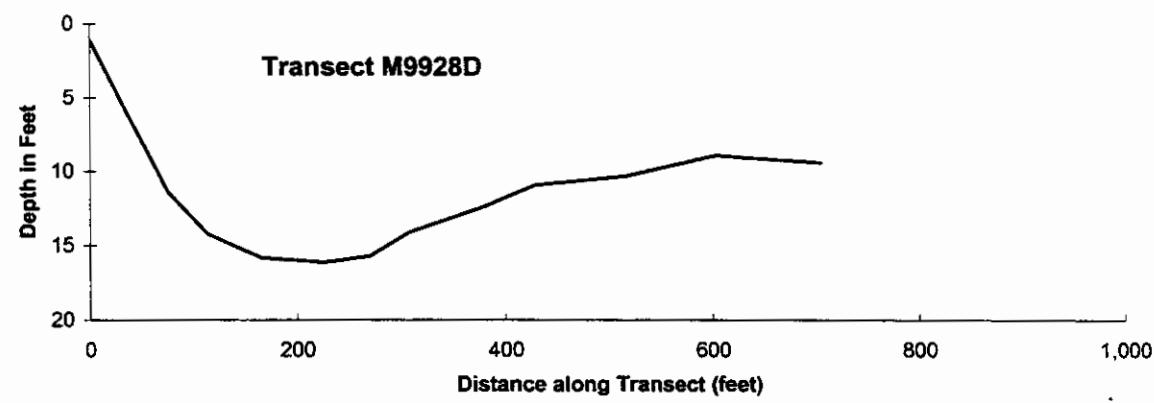
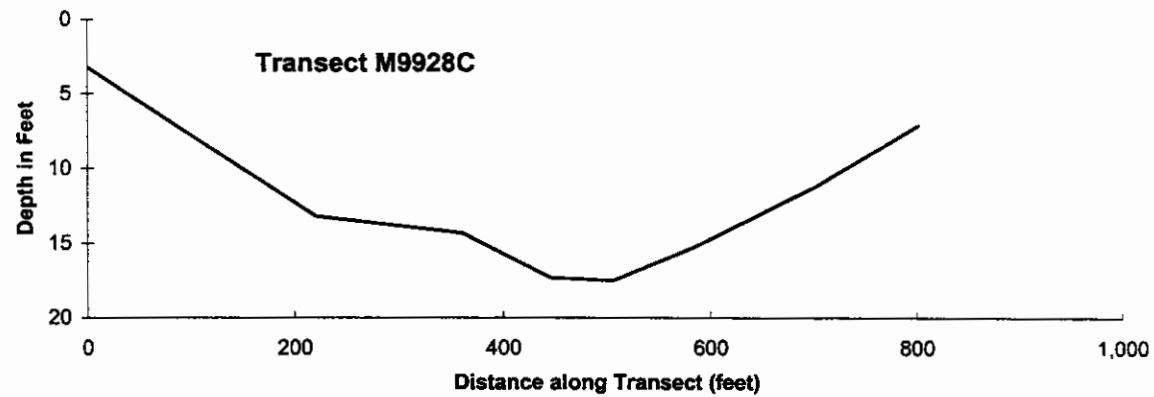
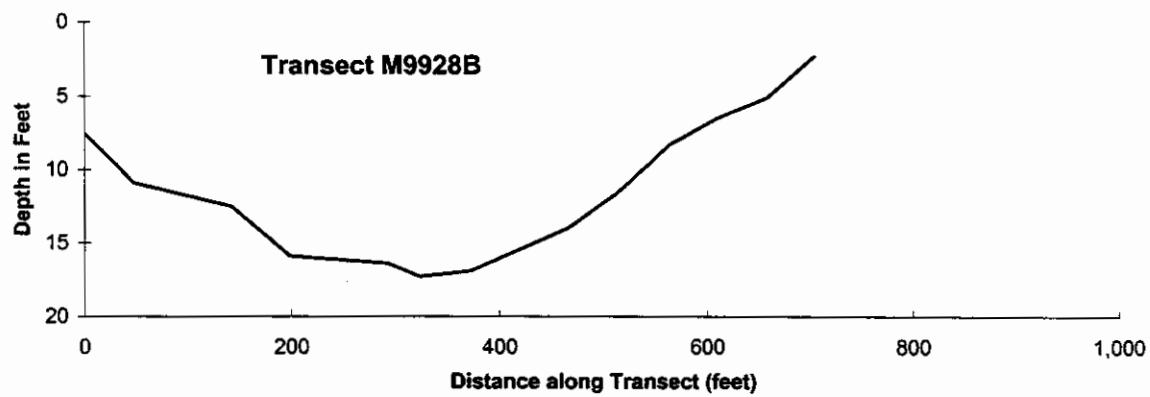
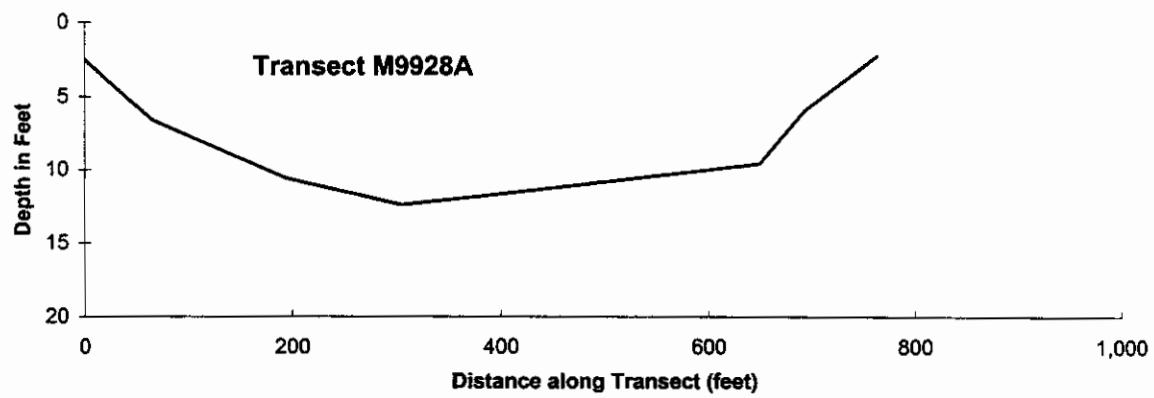
### Water Quality:

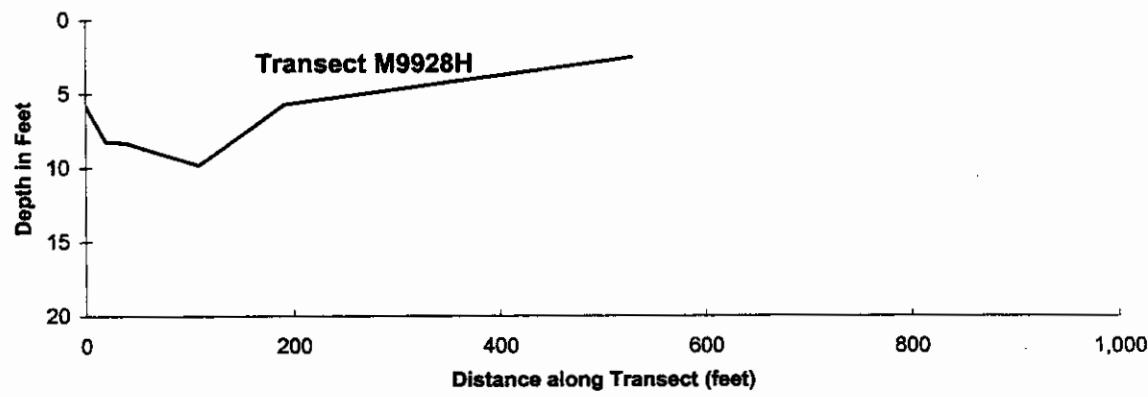
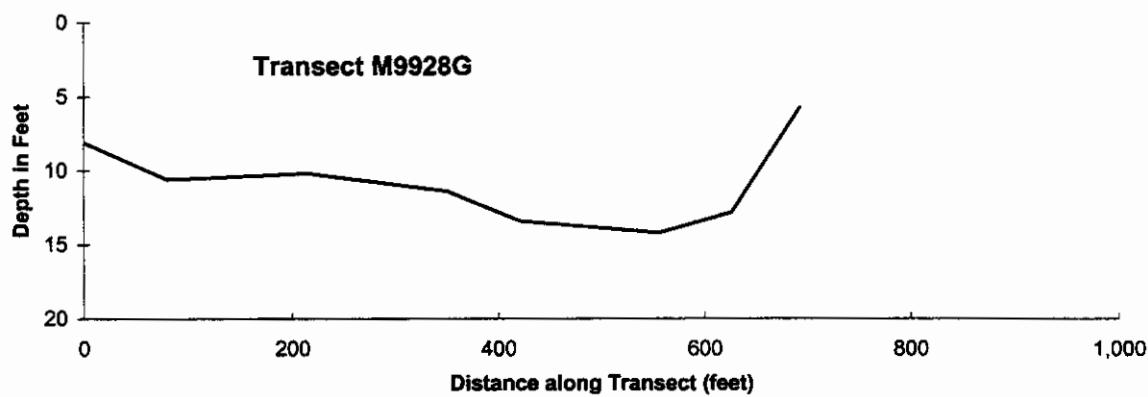
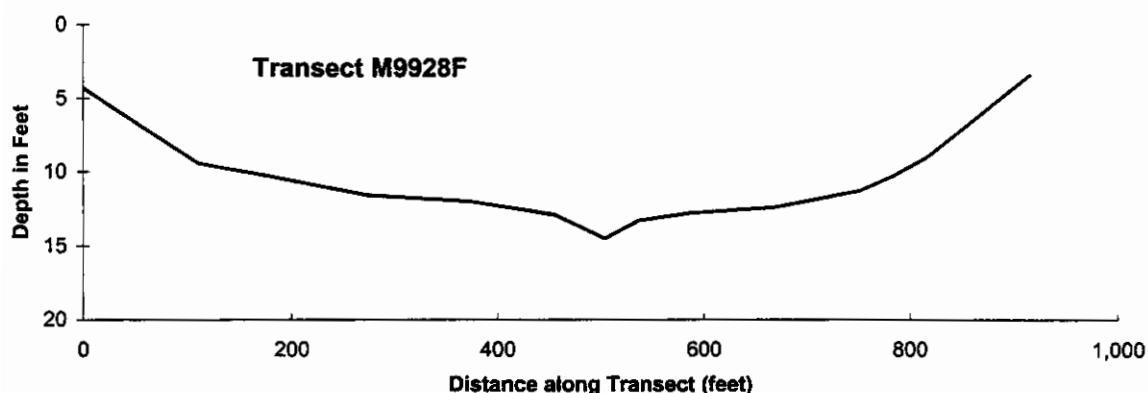
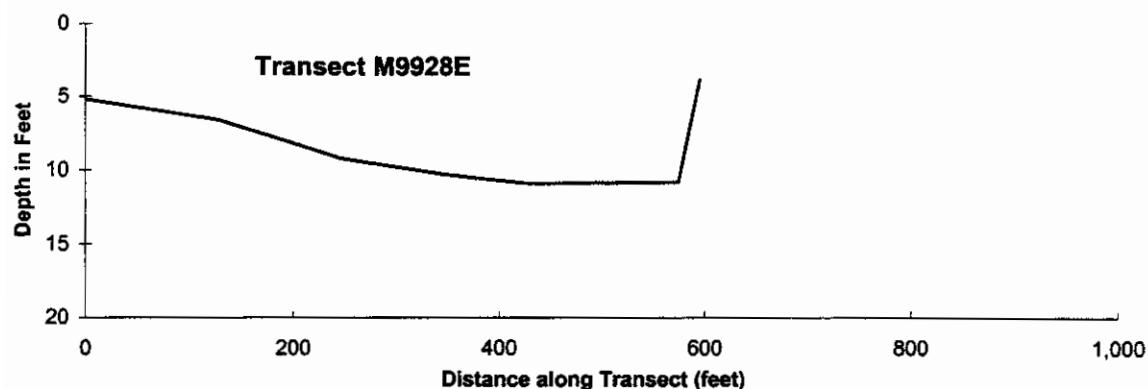
Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	8.42	4	16.4	2.7	52.2	62	this study

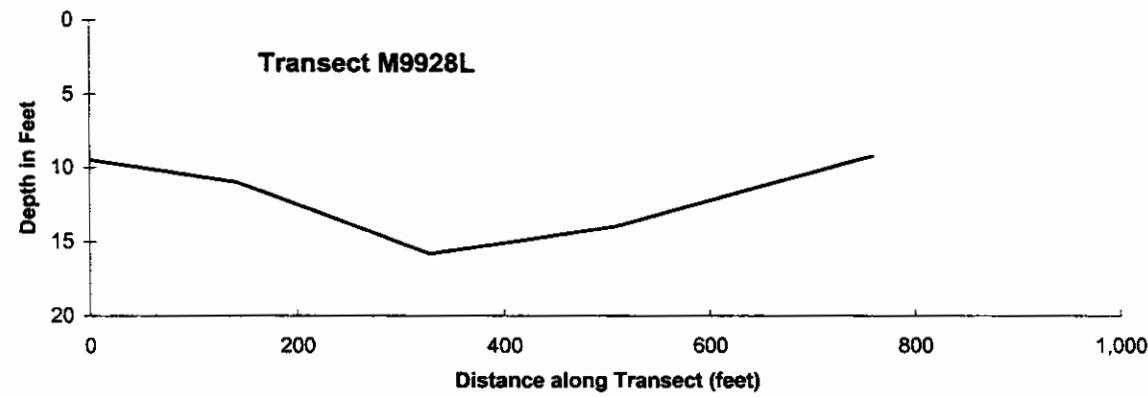
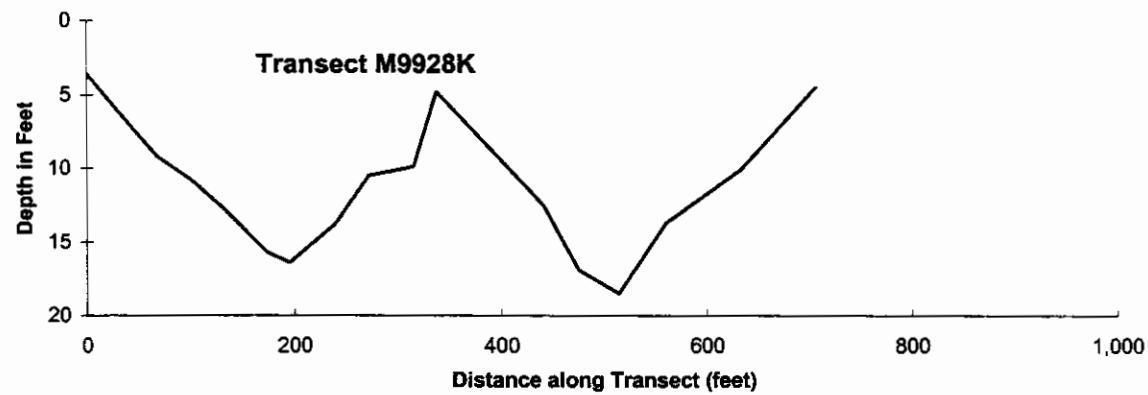
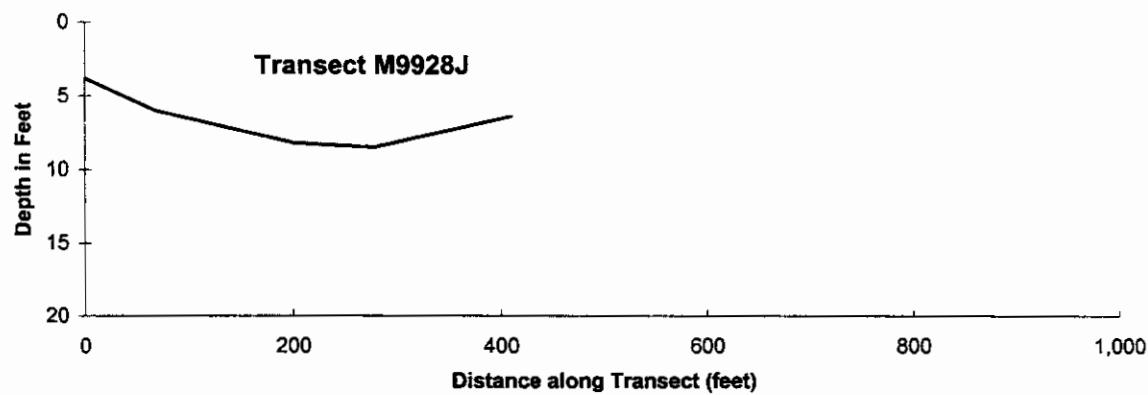
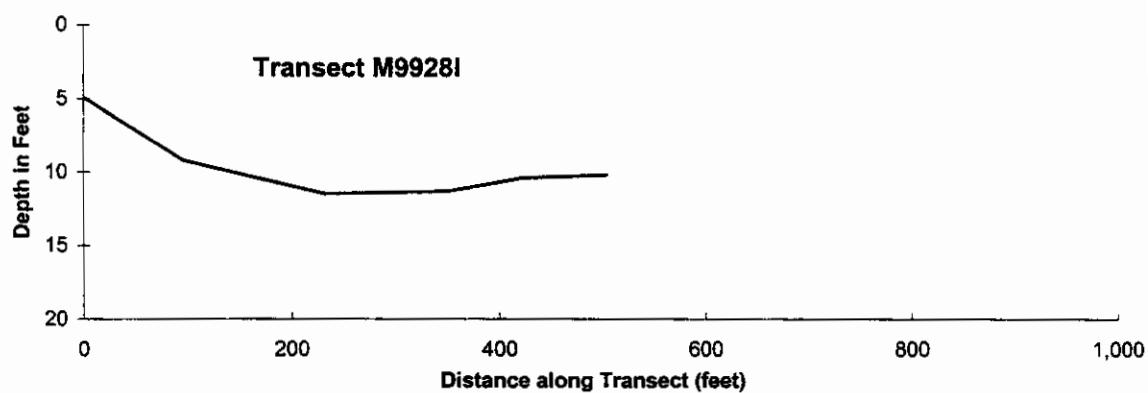
### Catch Record:

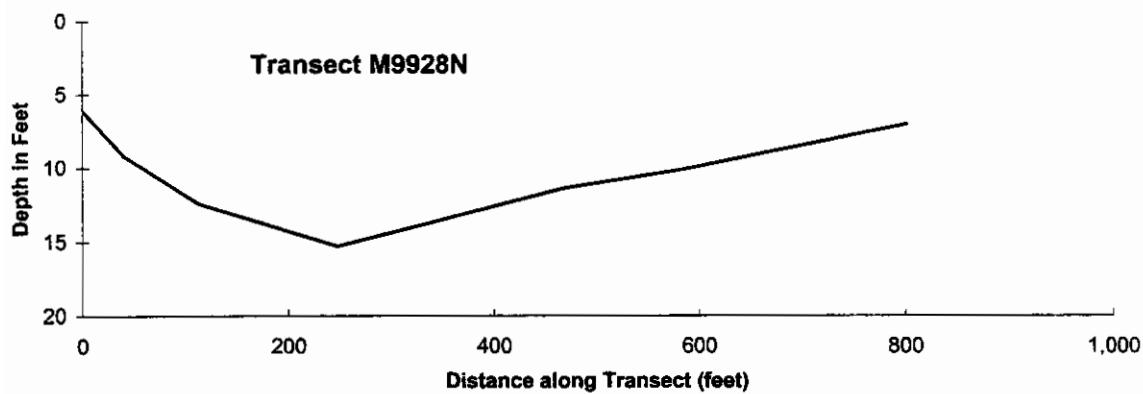
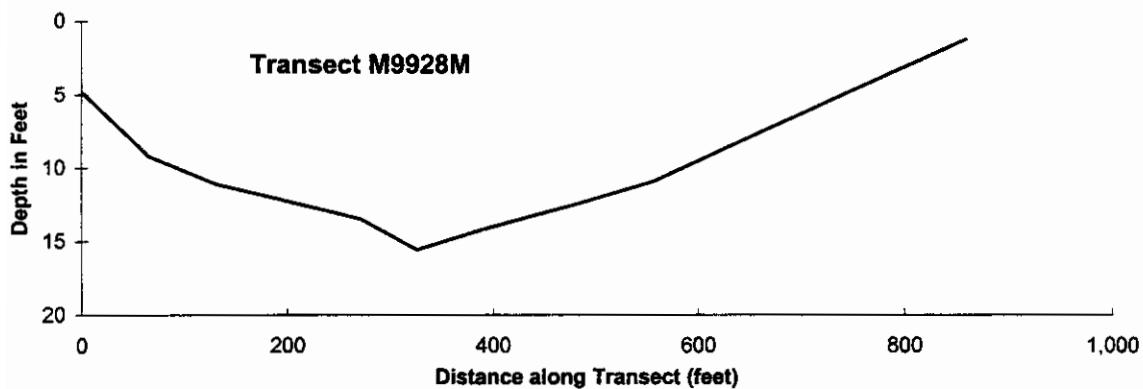
Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gillnet	Jul 20 99	1.6	Broad whitefish Least cisco	3 13	580-605 156-346



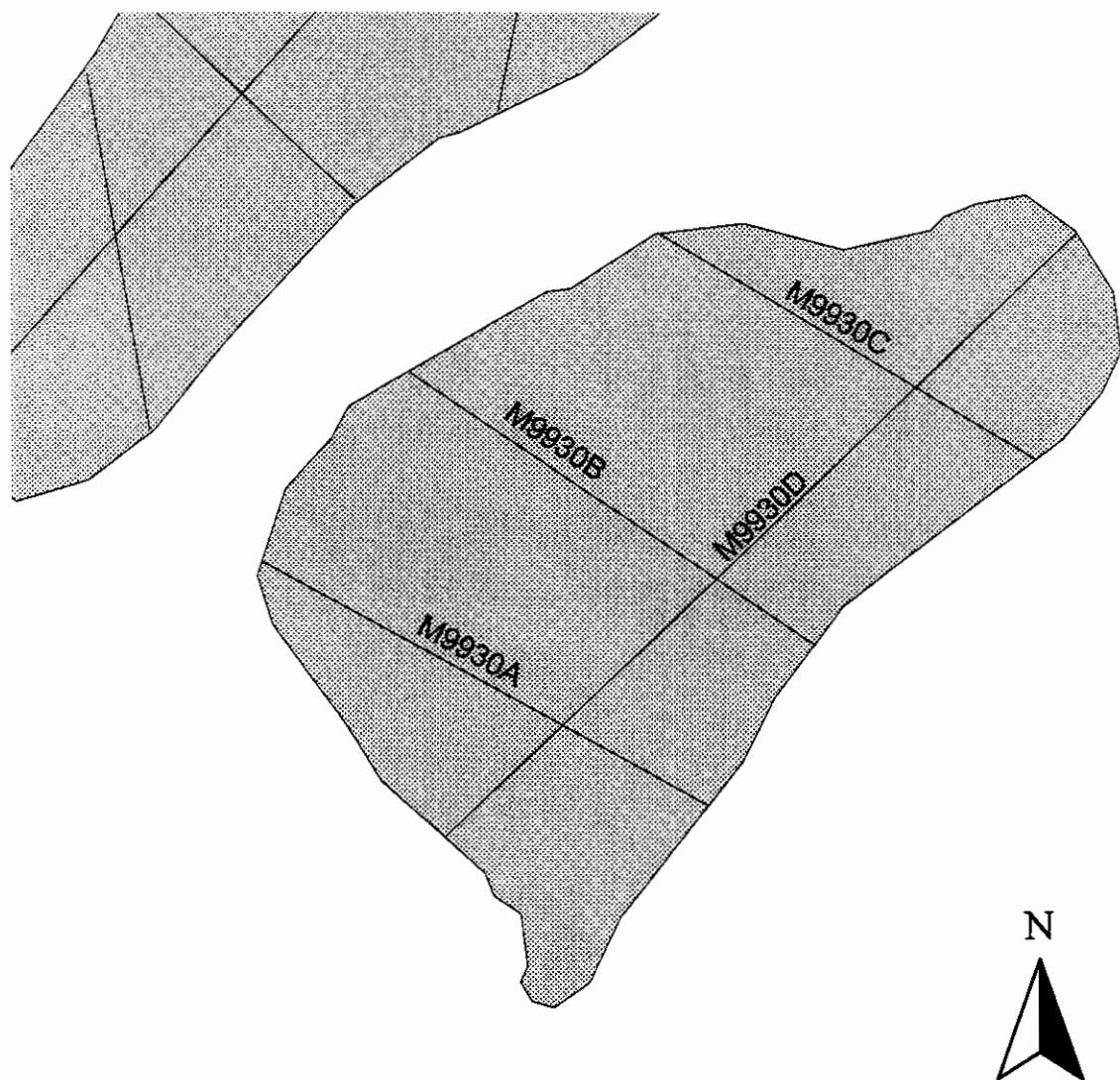








# M9930



0 300 600 900 1200 1500 Feet

**Lake M9930****Other Names:**

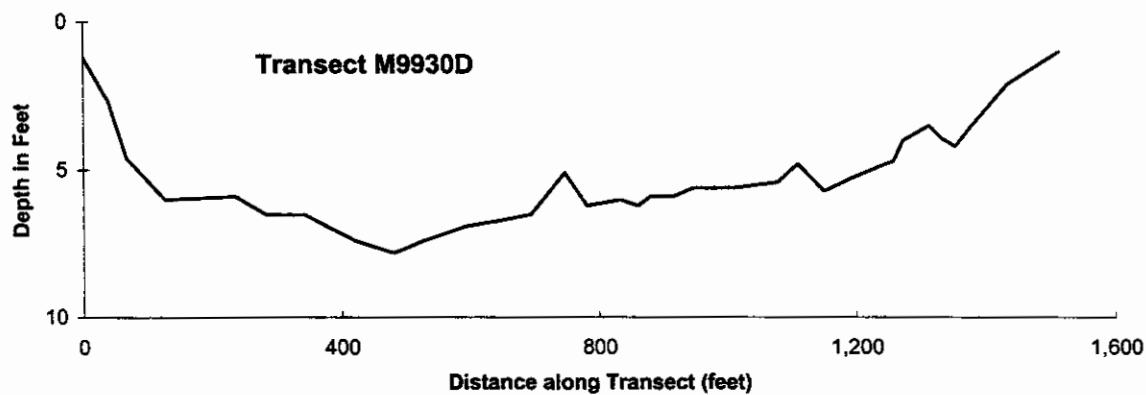
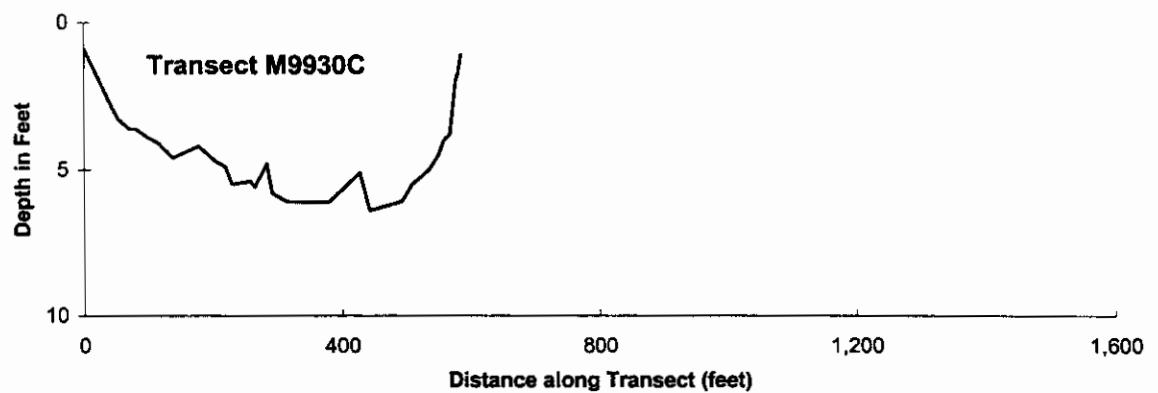
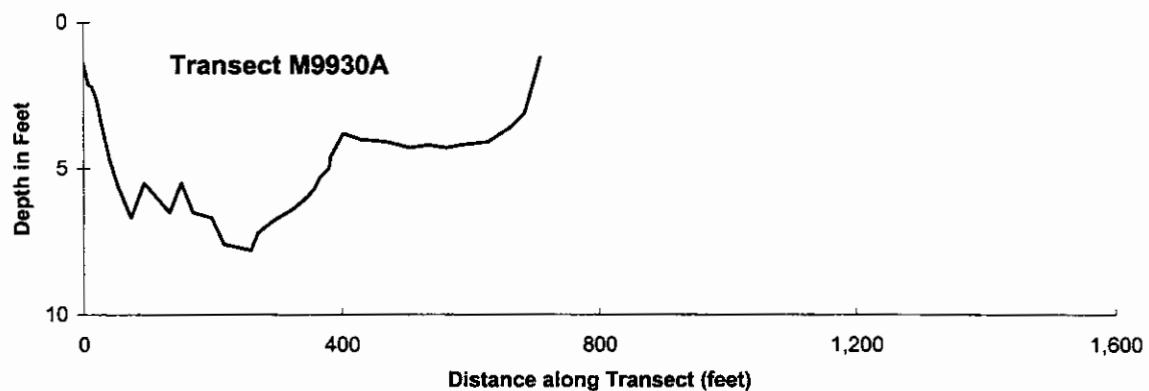
**Location:** 70°18.53'N 151°29.25'W  
**USGS Quad Sheet:** Harrison Bay B-3: T11N R3E Sect. 18  
**Habitat:** Tundra Lake  
**Area:** 23 acres  
**Maximum Depth:** 7.9 feet  
**Active Outlet:**  
**Spec. Conductance:** 178.5  $\mu\text{S}/\text{cm}$   
**pH:** 8.3  
**Calculated Volume:** 19.9 million gallons  
**Permittable Volume:** 0.3 million gallons

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	17.8	7.3	25.2	3.6	77.8	88	this study

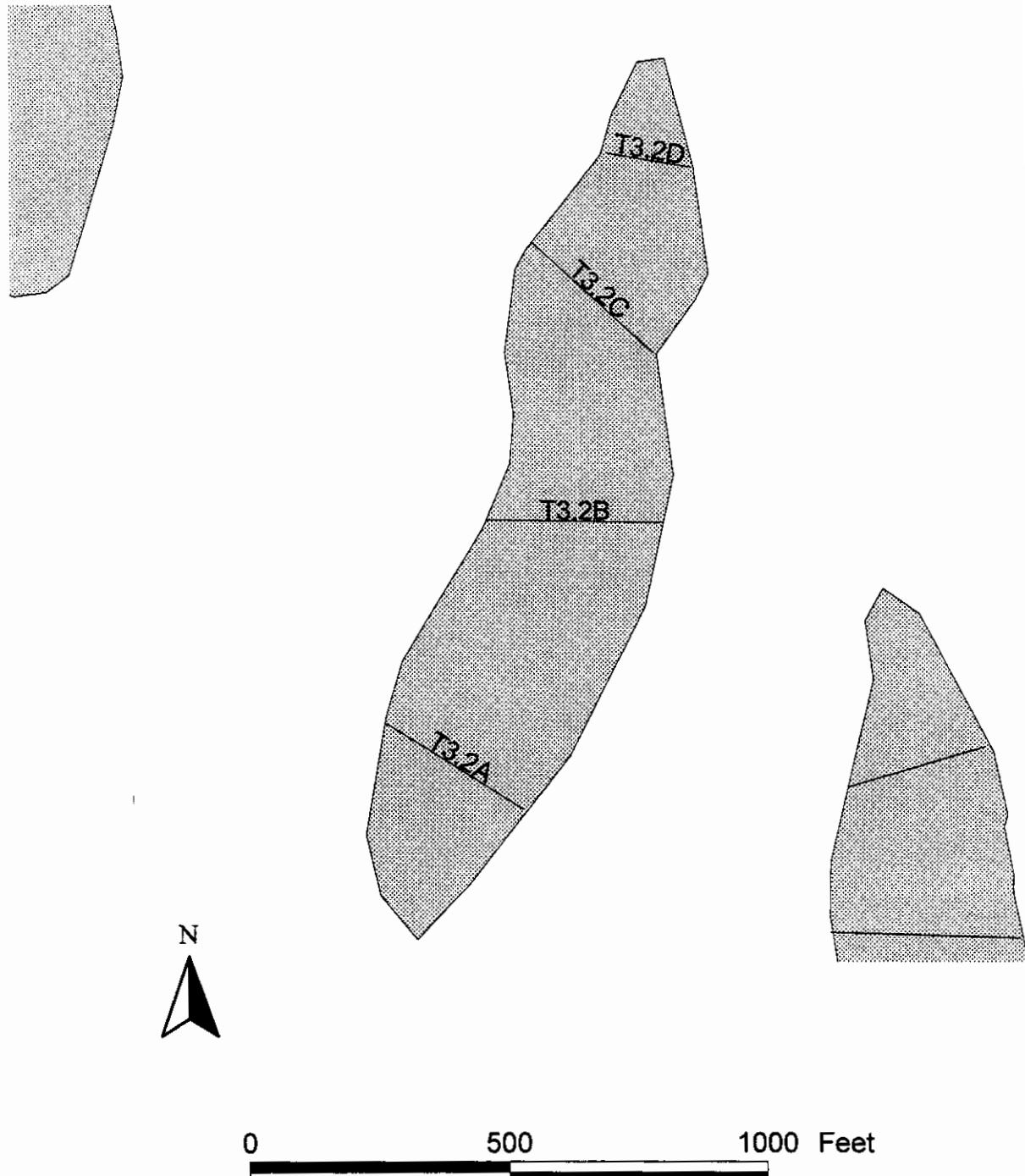
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gillnet	Jul 27 99	5.7	None	0



2-179

# T3.2



## Lake T3.2

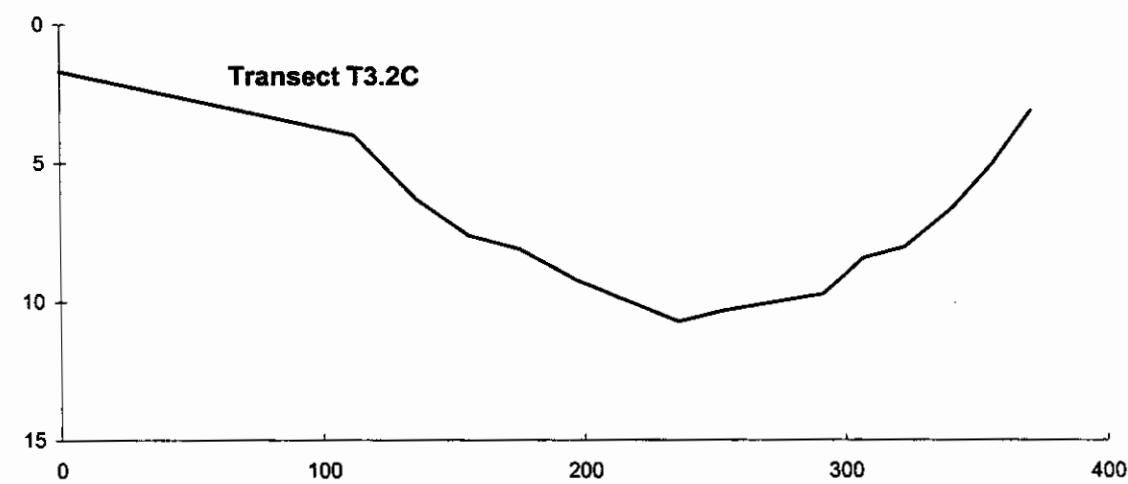
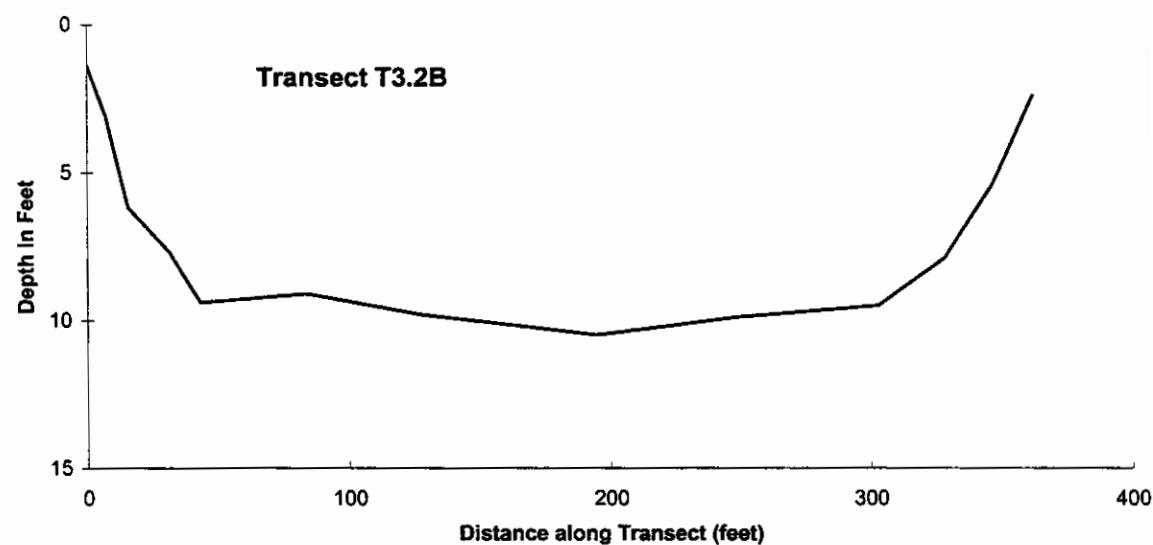
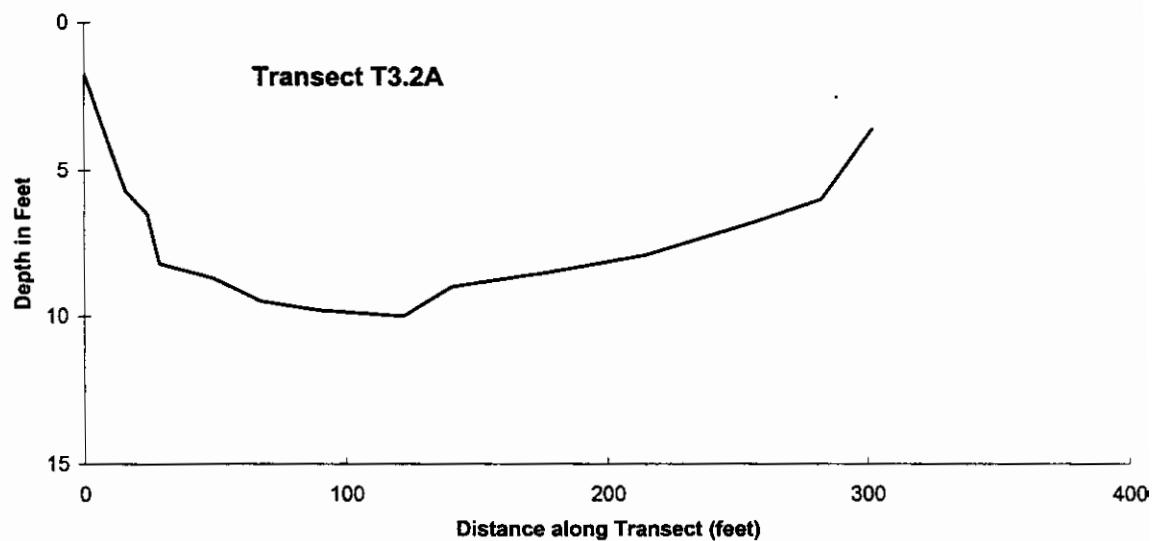
**Other Names:** M9932  
**Location:** 70°20.05'N 151°5.50'W  
**USGS Quad Sheet:** Harrison Bay B-2: T11N R4E Sect. 3  
**Habitat:** Perched Lake (Frequent Flooding)  
**Area:** 14 acres  
**Maximum Depth:** 12.5 feet  
**Active Outlet:**  
**Spec. Conductance:** 389.8  $\mu\text{S}/\text{cm}$   
**pH:** 7.5  
**Calculated Volume:** 18.4 million gallons  
**Permittable Volume:** 1.2 million gallons

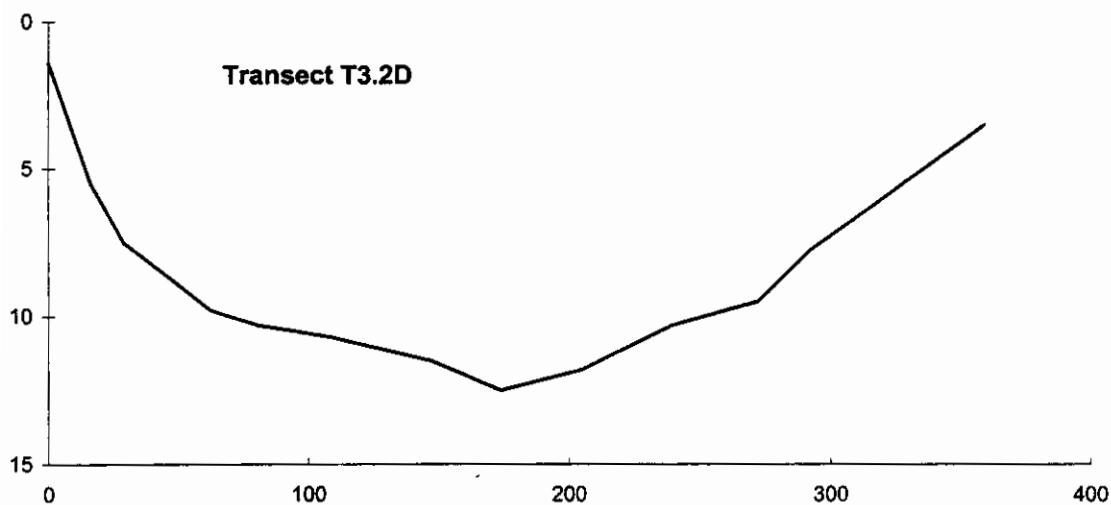
### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	87	54.3	12.3	8.1	60.2	194	this study

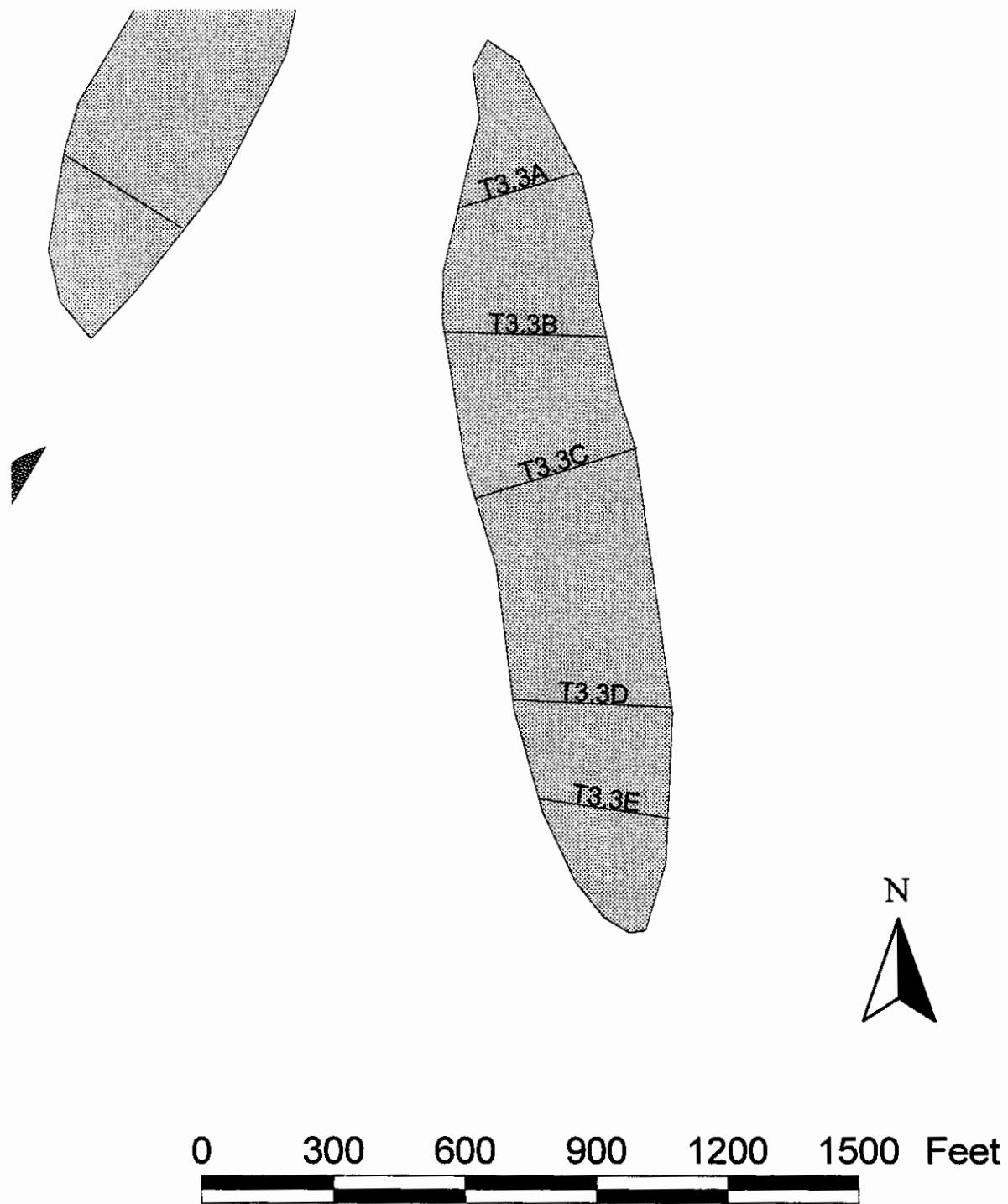
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gillnet	Jul 30 99	5.9	Broad whitefish Least cisco	4 2	486-570 339, 350





# T3.3



**Lake T3.3**

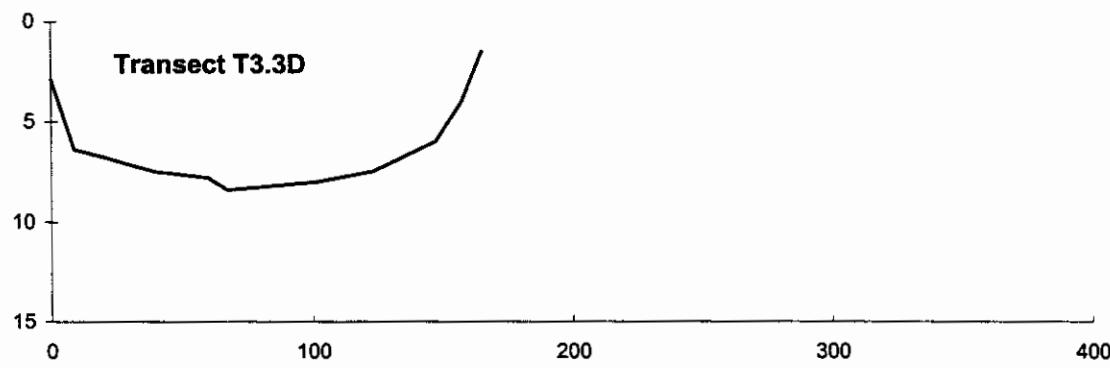
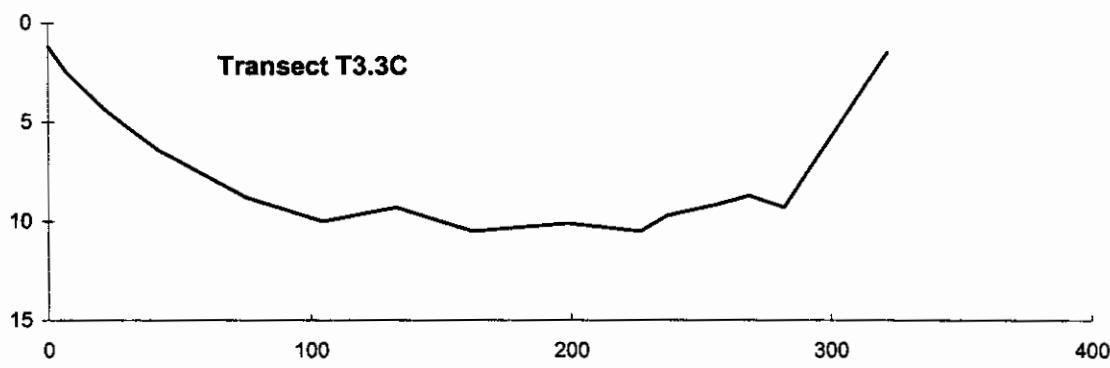
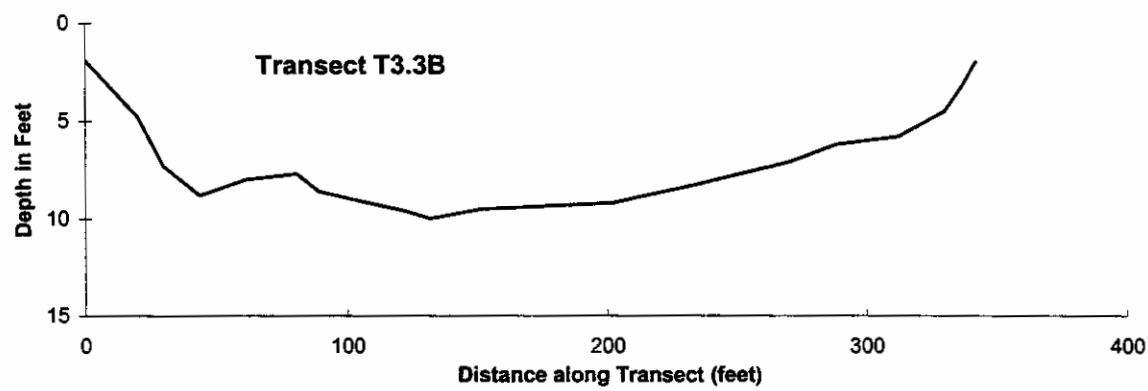
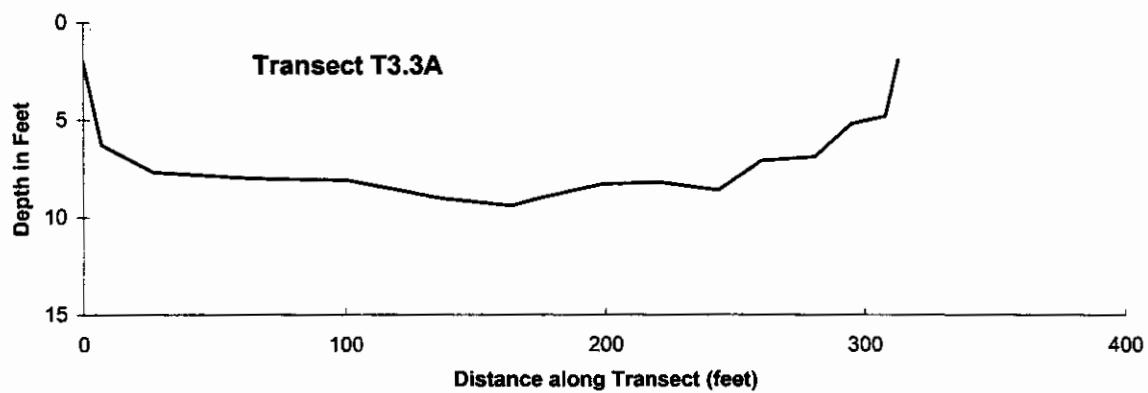
**Other Names:** M9931  
**Location:** 70°20.22'N 151°5.81'W  
**USGS Quad Sheet:** Harrison Bay B-2: T11N R4E Sect. 3  
**Habitat:** Perched Lake (Frequent Flooding)  
**Area:** 12 acres  
**Maximum Depth:** 10.5 feet  
**Active Outlet:**  
**Spec. Conductance:** 328.1  $\mu\text{S}/\text{cm}$   
**pH:** 7.8  
**Calculated Volume:** 13.1 million gallons  
**Permittable Volume:** 0.7 million gallons

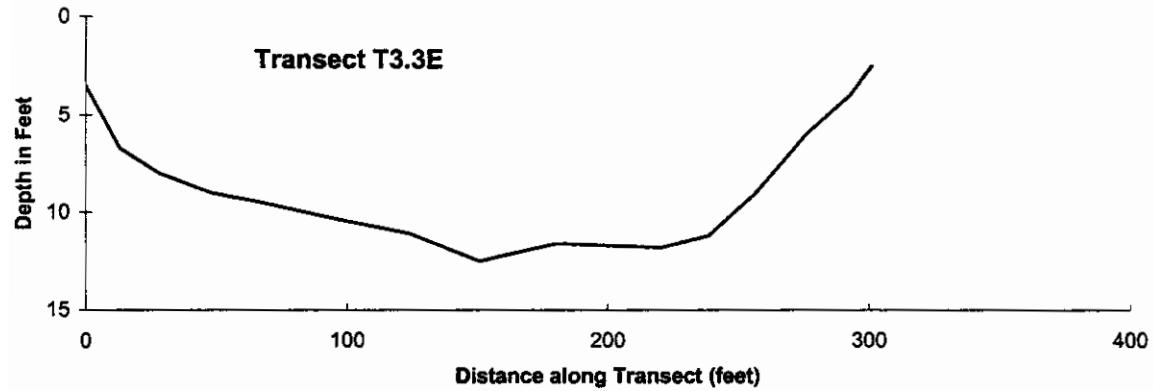
**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1999	57.8	41.3	11.8	7.5	58.6	160	this study

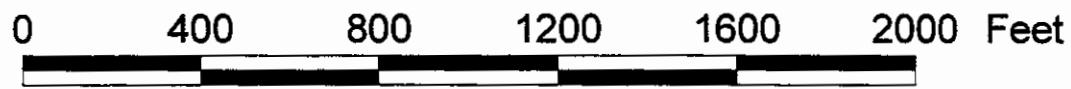
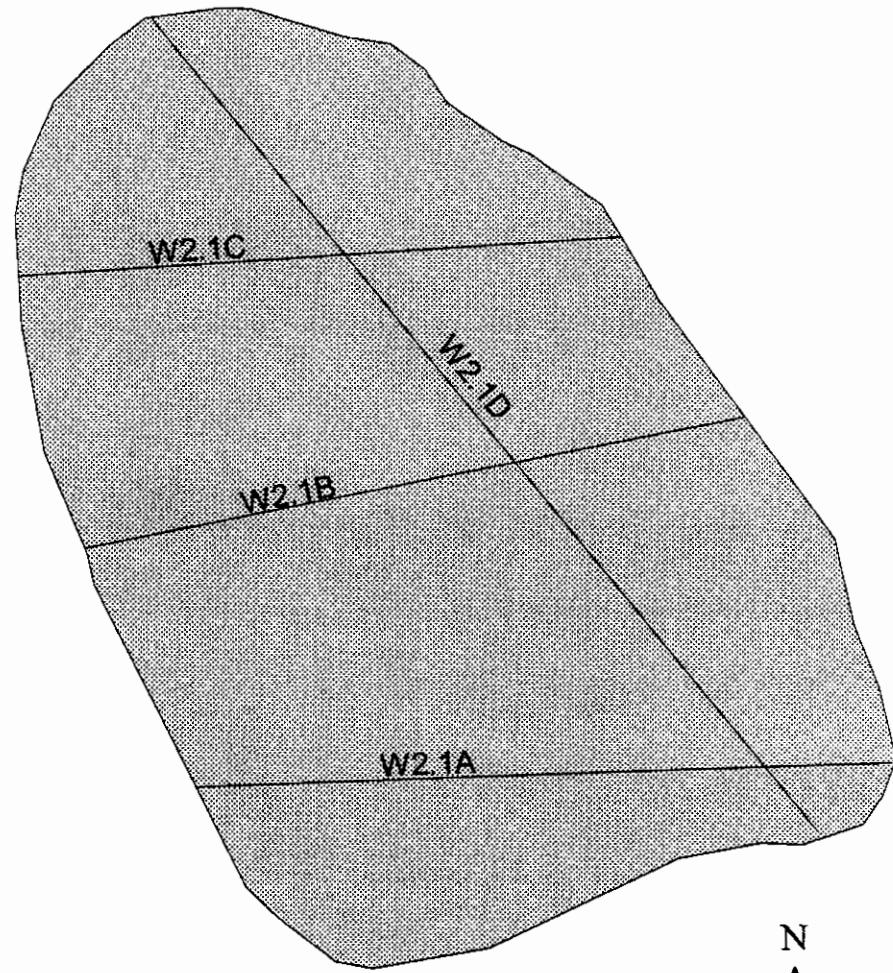
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gillnet	Jul 30 99	3.8	Broad whitefish Least cisco	1 1	198 214





# **W2.1**



### Lake W2.1

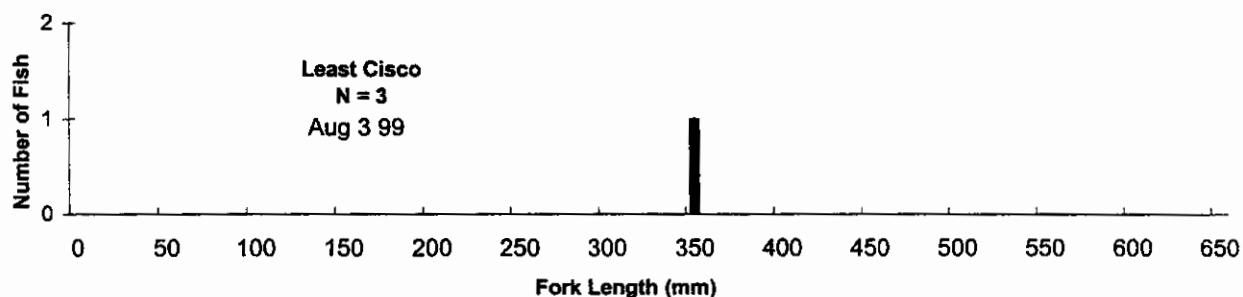
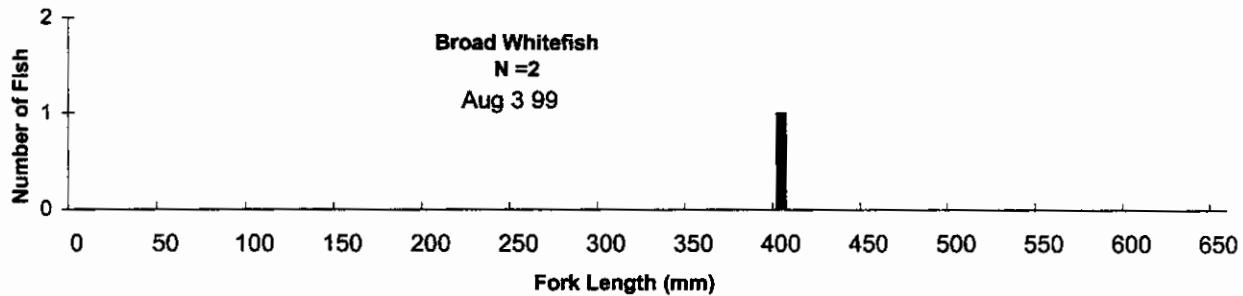
**Other Names:** L9306  
**Location:** 70°17.73'N 151°06.28'W  
**USGS Quad Sheet:** Harrison Bay B-2: T11N R4E Sect. 22  
**Habitat:** Perched Lake (Frequent Flooding)  
**Area:** 64 acres  
**Maximum Depth:** 10.2 feet  
**Active Outlet:**  
**Spec. Conductance:** 145  $\mu\text{S}/\text{cm}$   
**pH:** 8.0  
**Calculated Volume:** 70.2 million gallons  
**Permittable Volume:** 3.3 million gallons

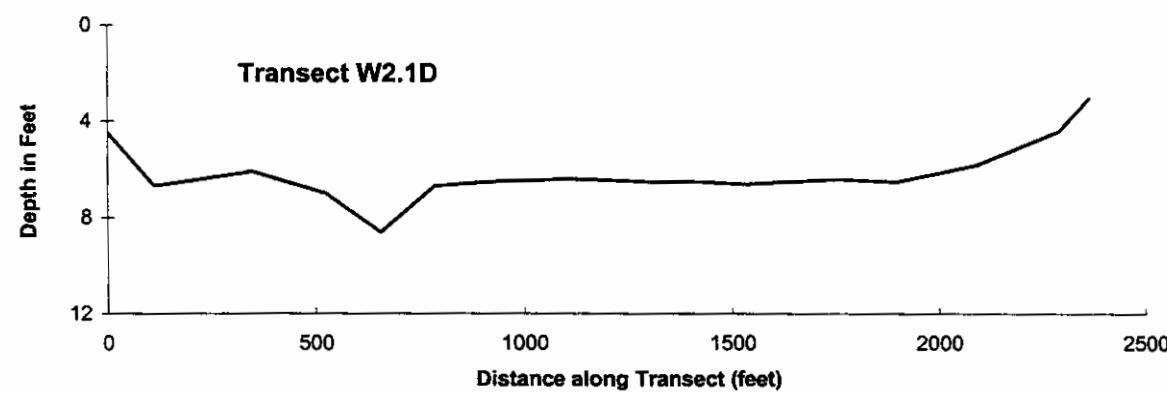
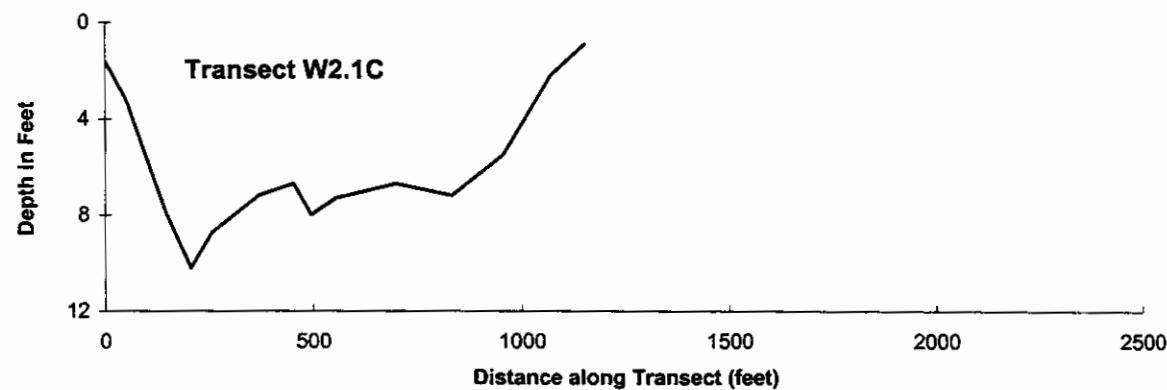
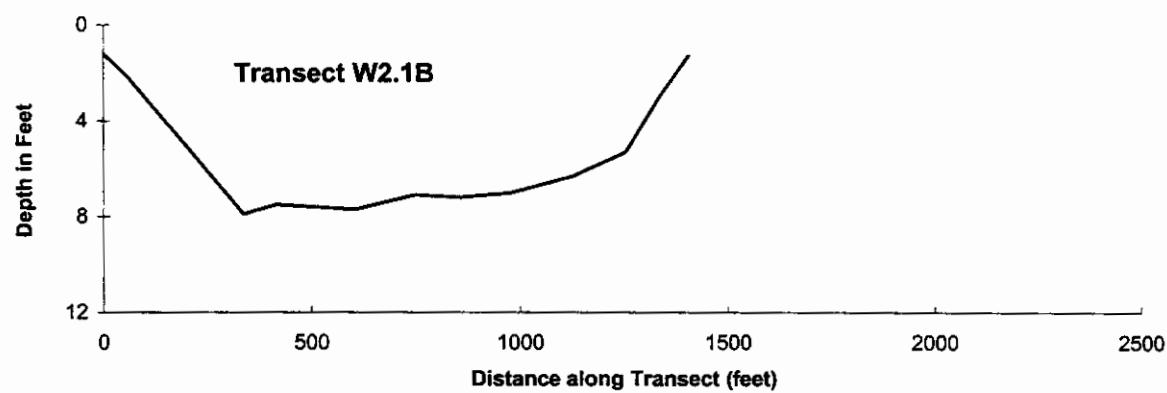
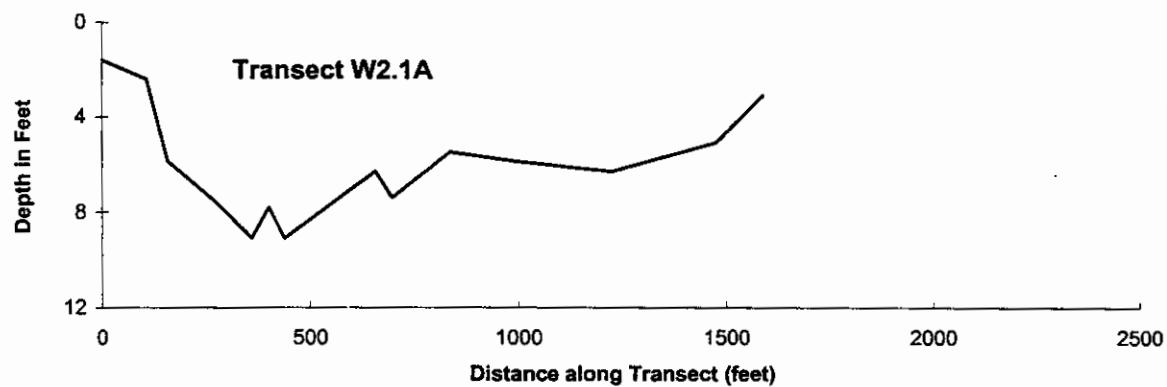
#### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1993	25.0	13.0	6	2.3	24	110	J. Lobdell
1998	21.1	9.5	7.3	3.1	31.1	68	J. Lobdell
1999	22.1	13.7	8.6	4	38	70	J. Lobdell

#### Catch Record:

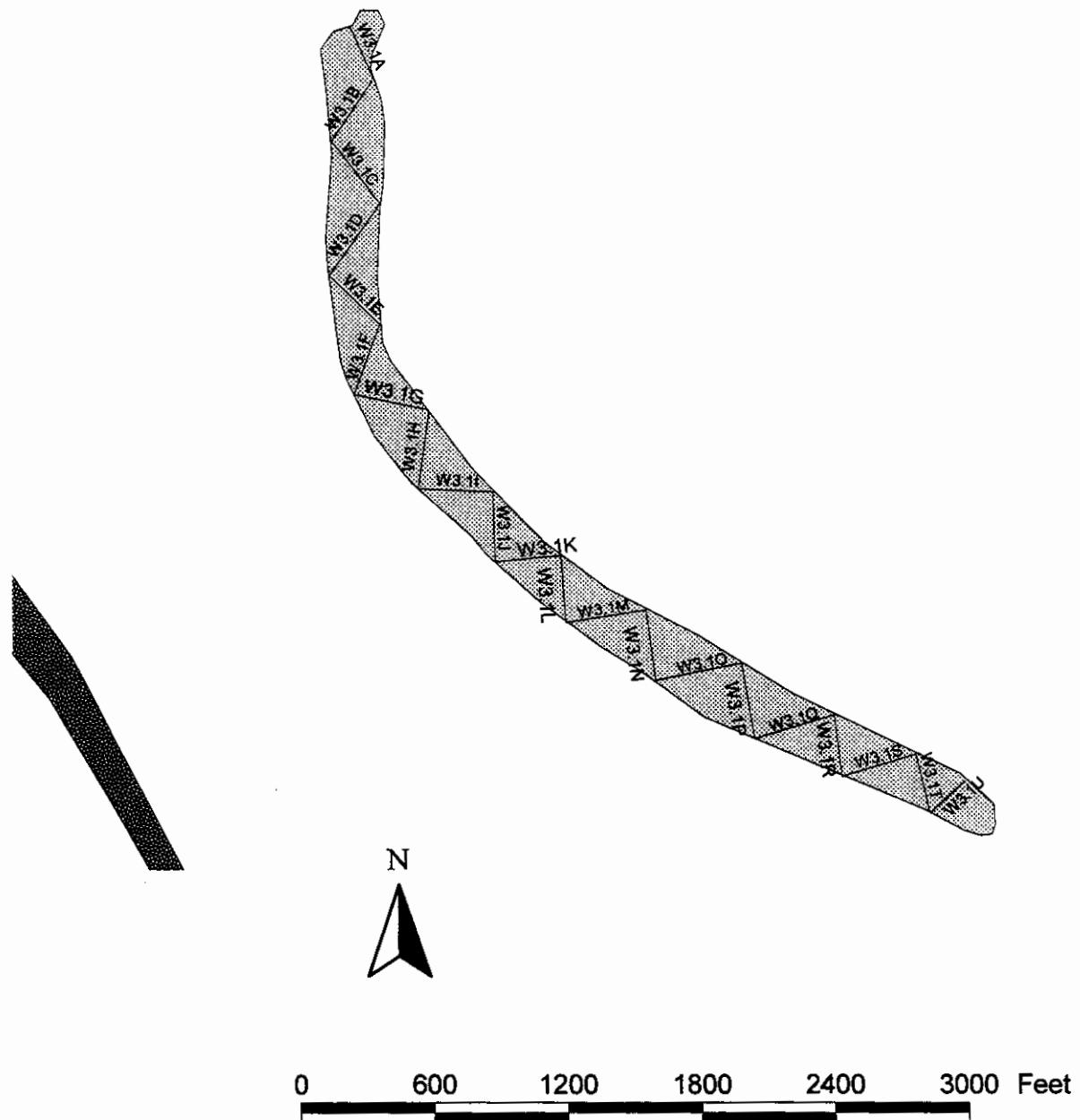
Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Aug 3 99	6.7	Broad whitefish Least cisco	2 3	131, 433 337-360







# W3.1



### Lake W3.1

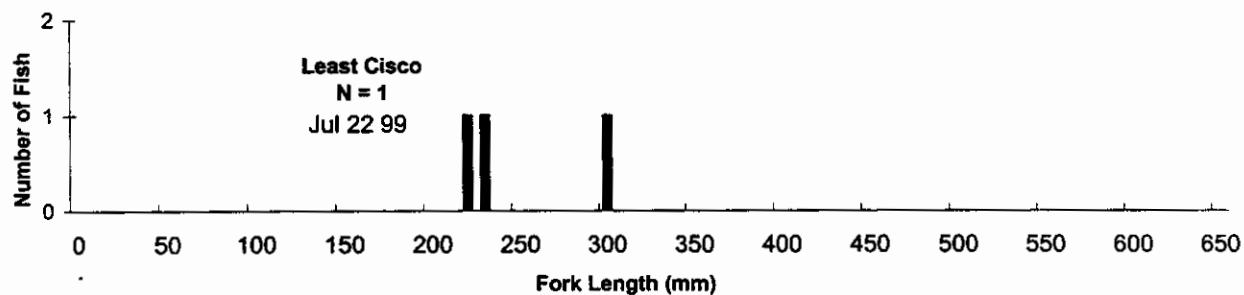
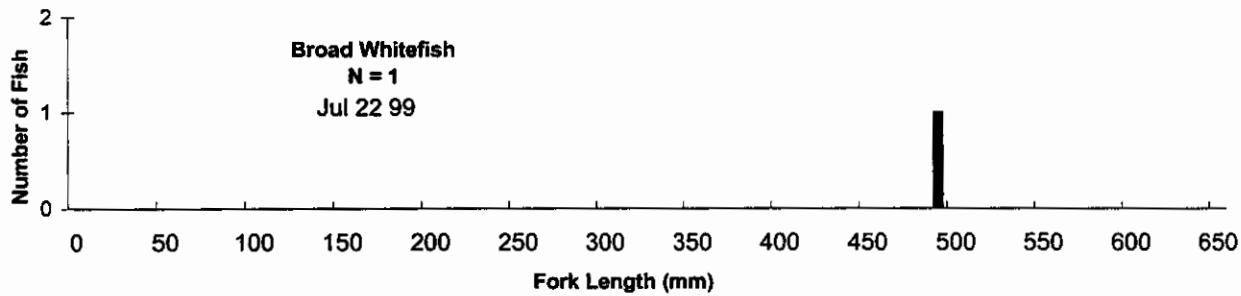
**Other Names:** L9341b  
**Location:** 70°17.35'N 151°04.05'W  
**USGS Quad Sheet:** Harrison Bay B-2: T11N R4E Sect. 23  
**Habitat:** Perched lake (frequent flooding)  
**Area:** 30 acres  
**Maximum Depth:** 19.3 feet  
**Active Outlet:**  
**Spec. Conductance:** 167  $\mu\text{S}/\text{cm}$   
**pH:** 7.9  
**Calculated Volume:** 62.3 million gallons  
**Permittable Volume:** 6.0 million gallons

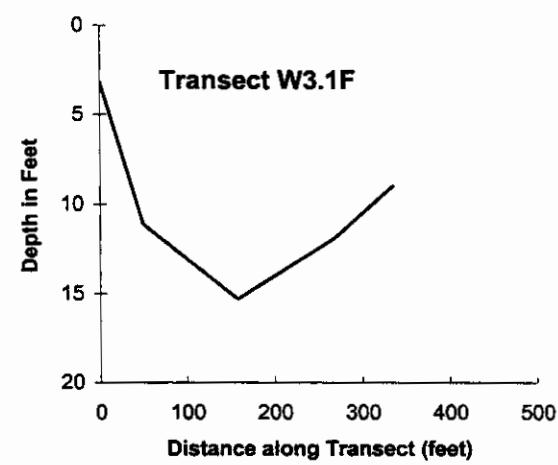
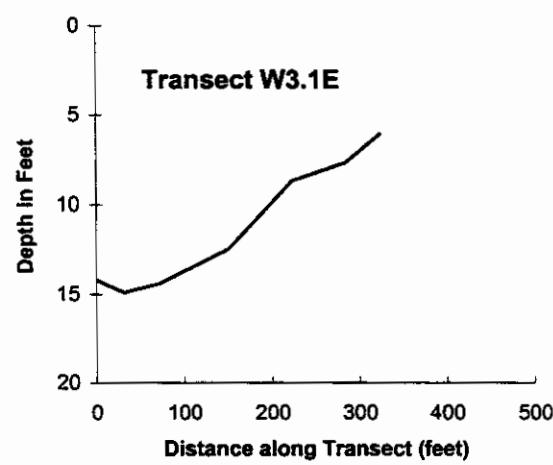
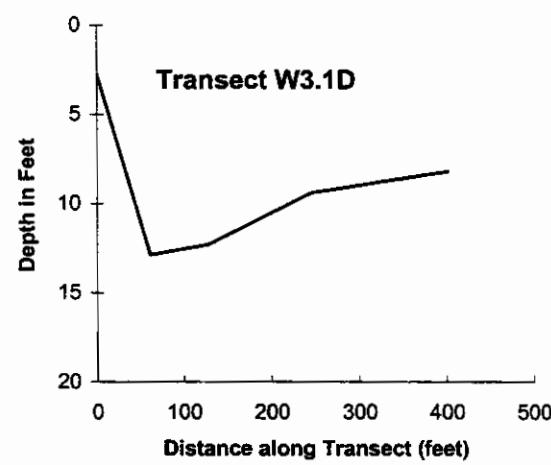
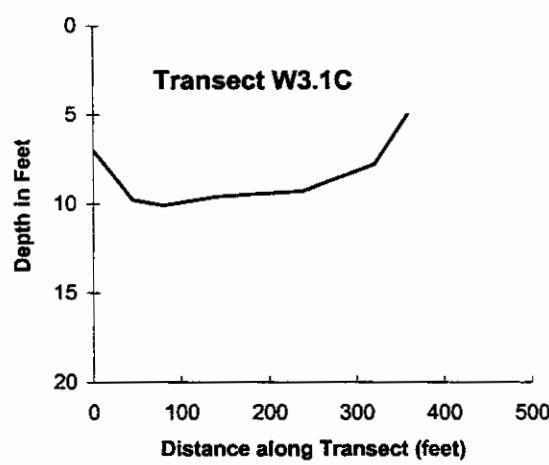
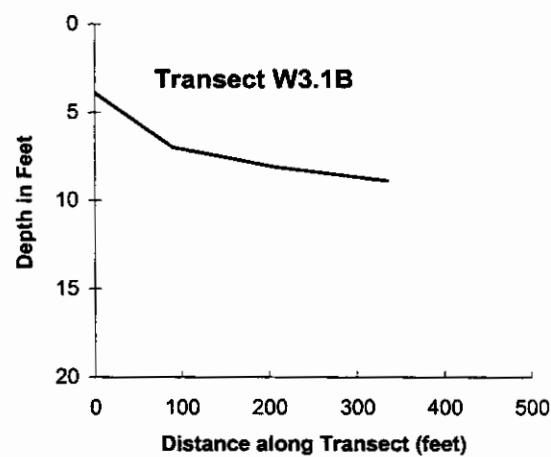
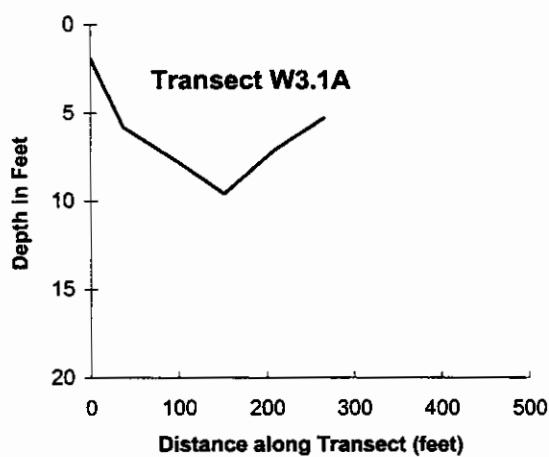
#### Water Quality:

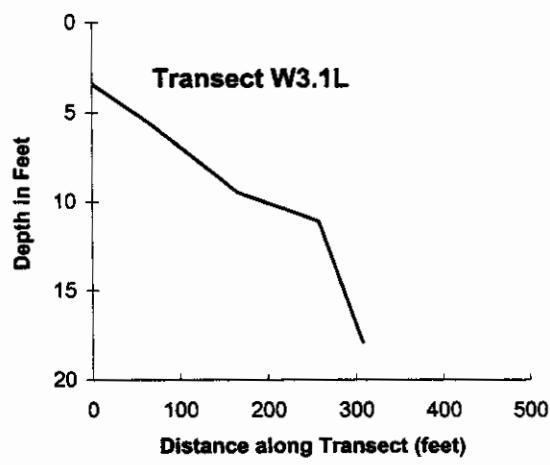
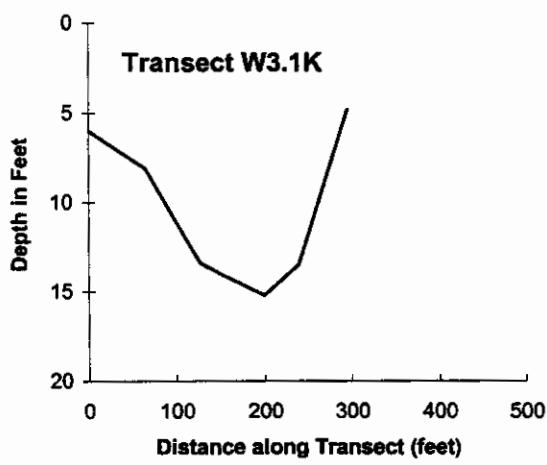
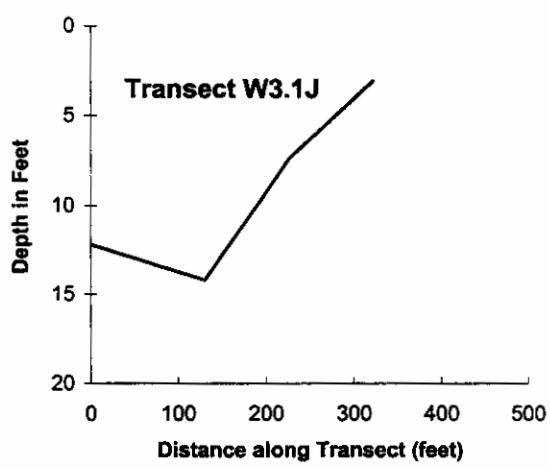
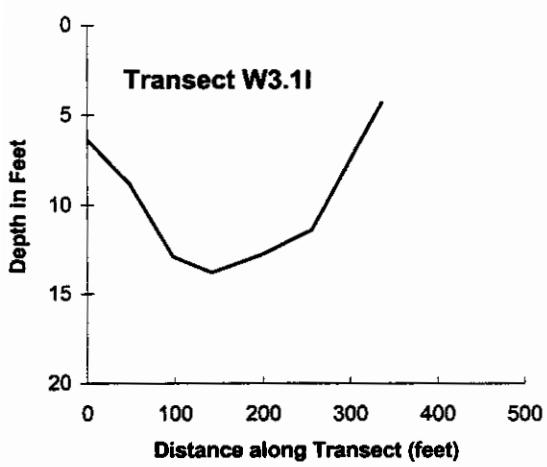
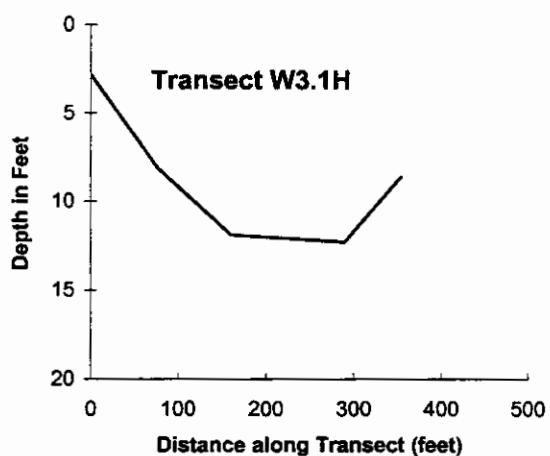
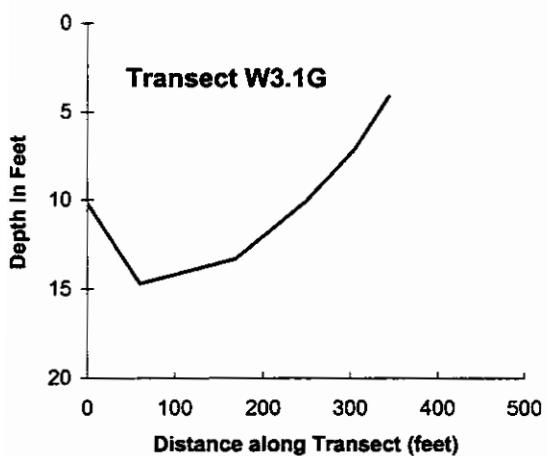
Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
1993	15	6.8	7.5	2.8	30	67	J. Lobdell

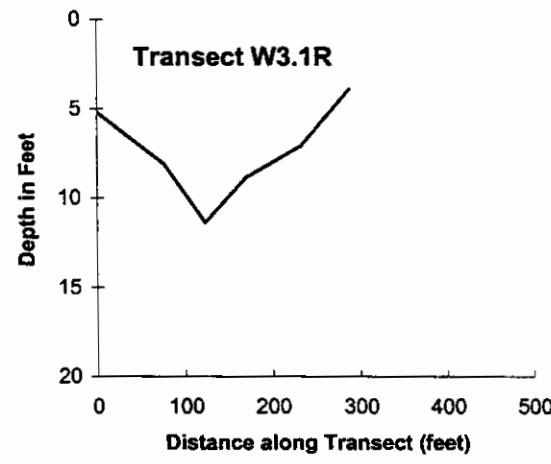
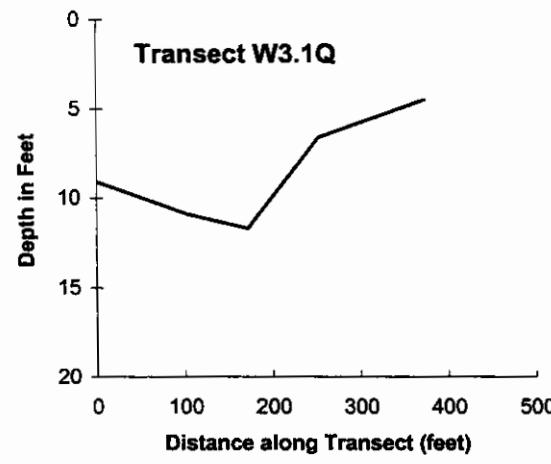
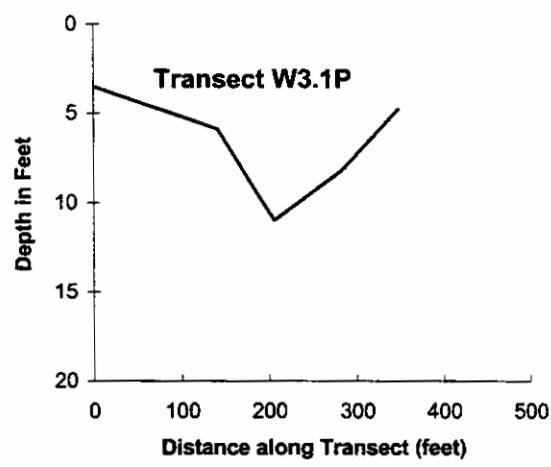
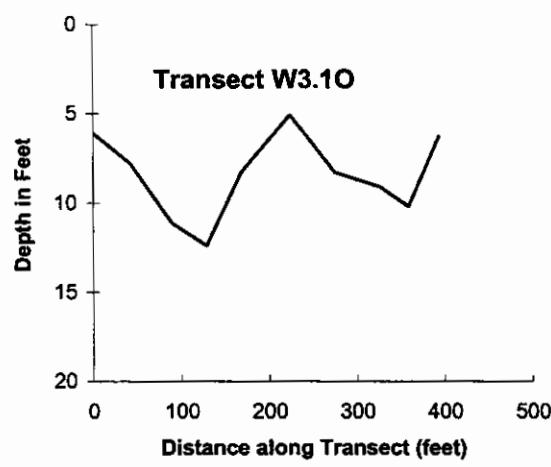
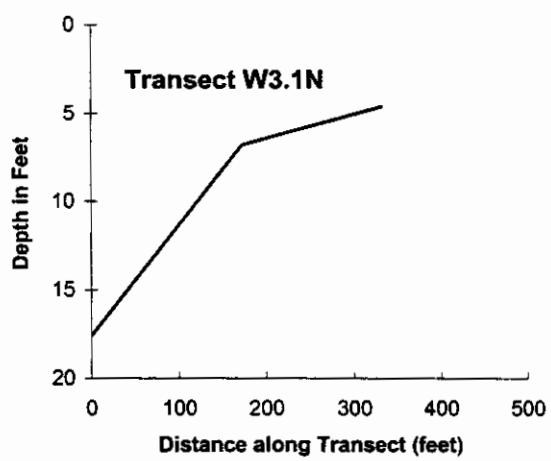
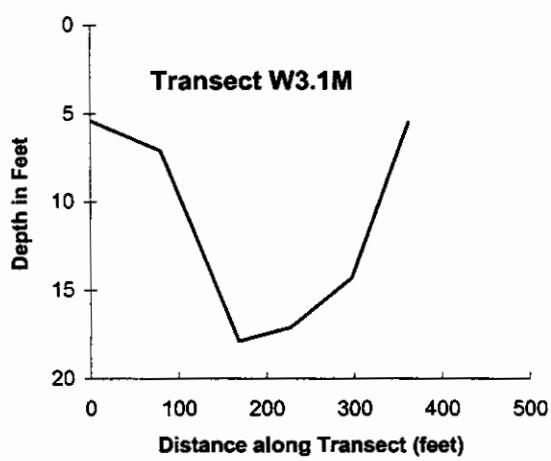
#### Catch Record:

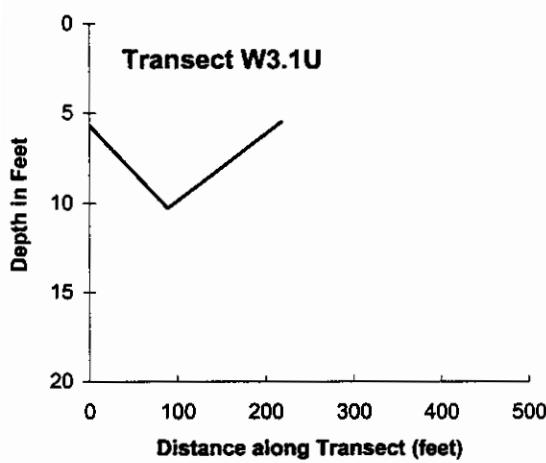
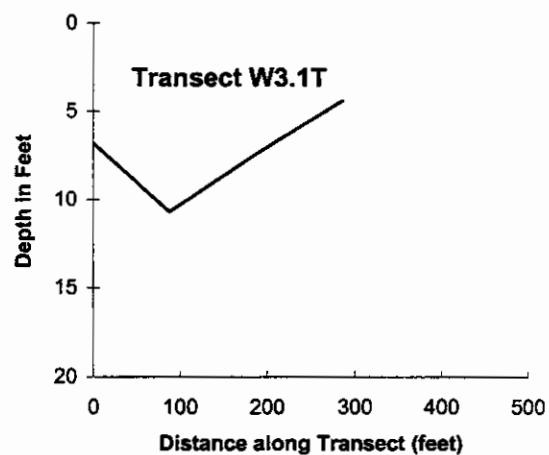
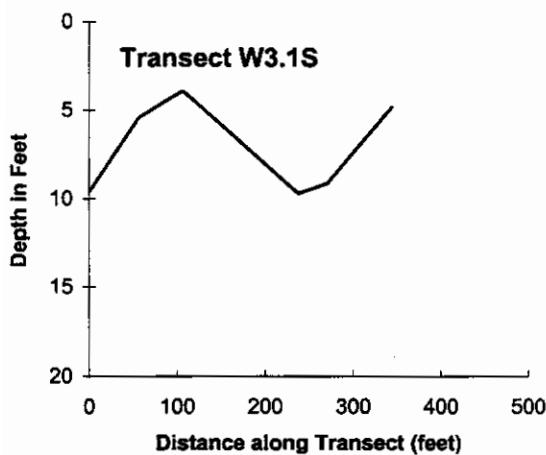
Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Jul 22 99	1.4	Broad whitefish	1	408
			Least cisco	1	355



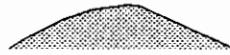
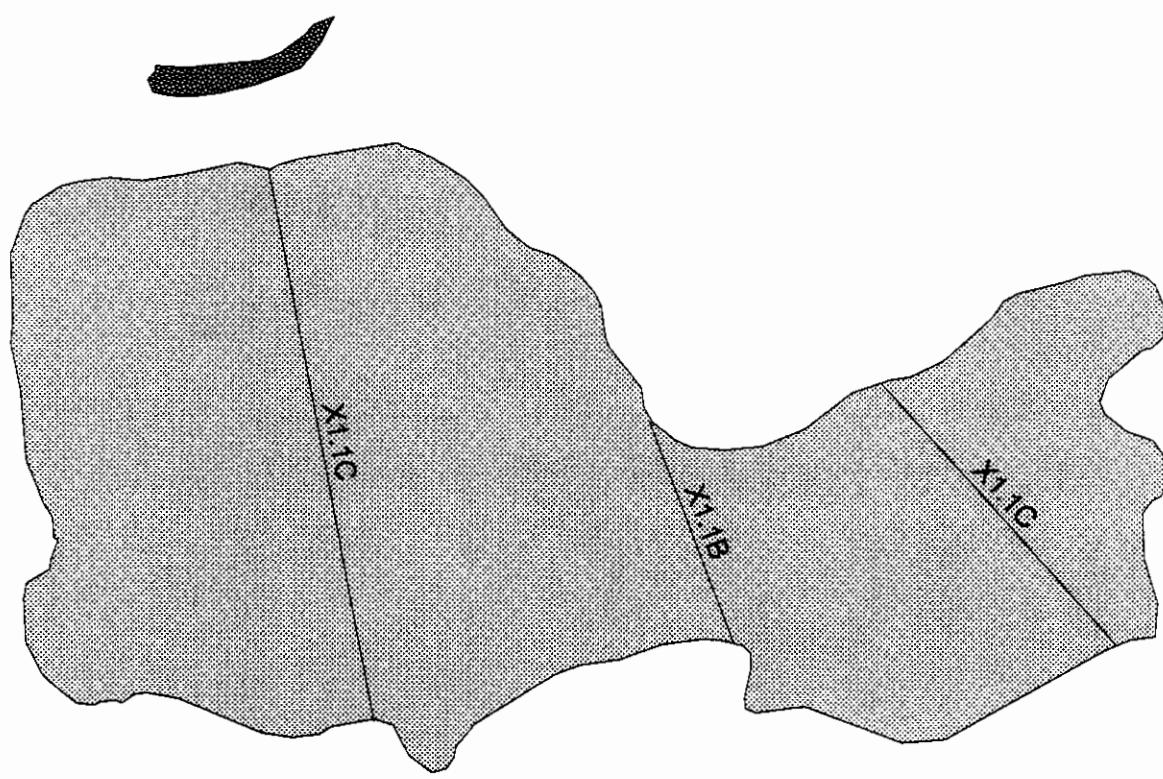








**X1.1**



0    600    1200    1800    2400    3000    Feet



## Lake X1.1

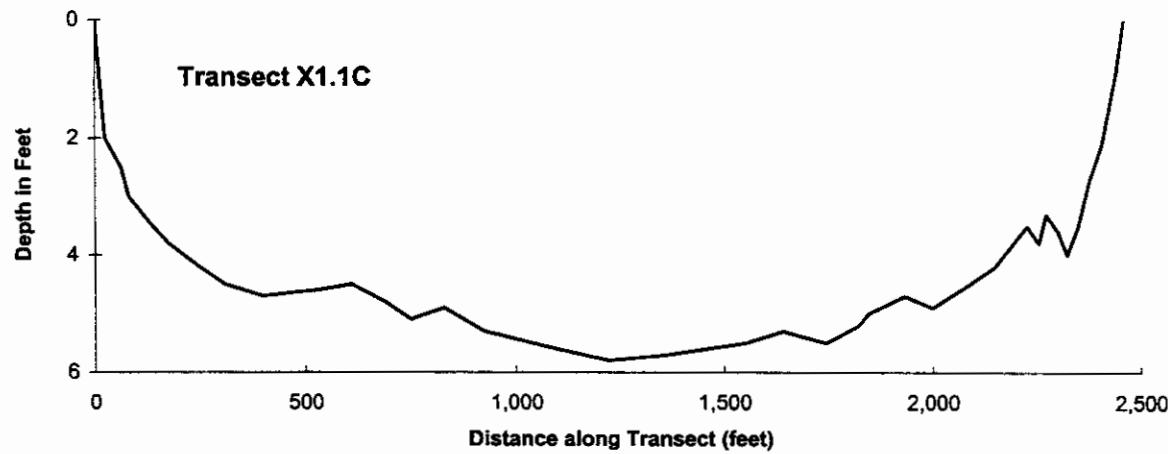
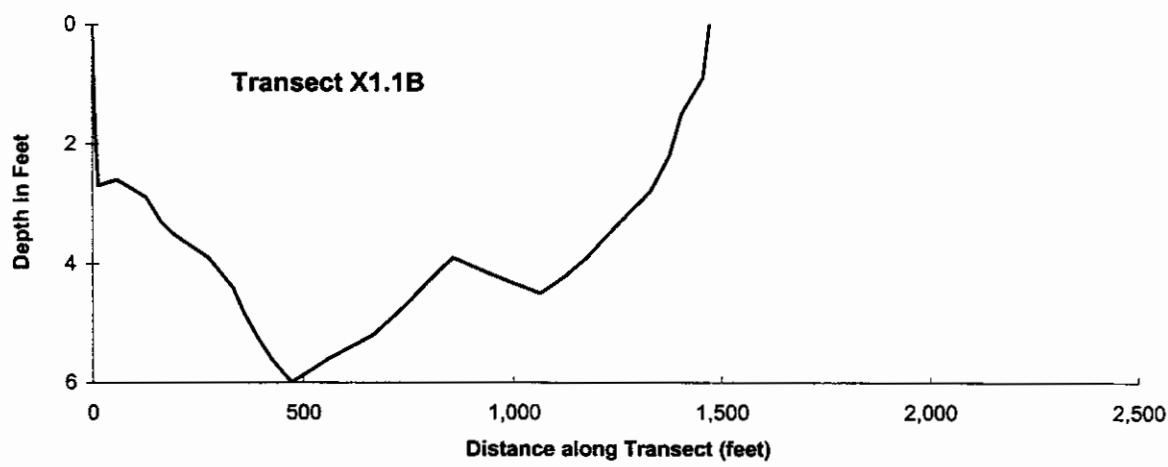
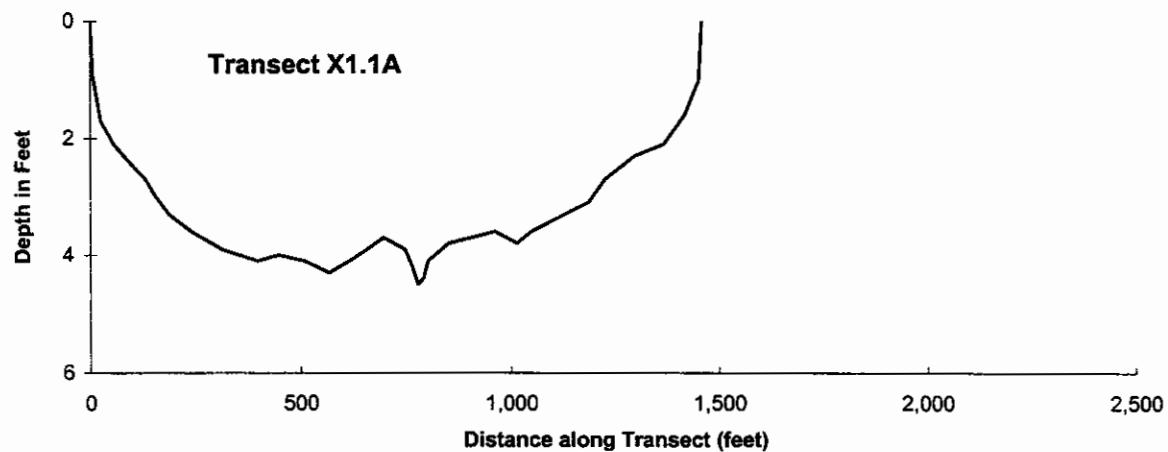
**Other Names:** L9802  
**Location:** 70°16.05'N 151°11.60'W  
**USGS Quad Sheet:** Harrison Bay B-2: T11N R4E Sect. 31/32  
**Habitat:** Tundra lake  
**Area:** 222 acres  
**Maximum Depth:** 6 feet  
**Active Outlet:** No  
**Spec. Conductance:** 172 µS/cm  
**pH:** 8.2  
**Calculated Volume:** 143.1 million gallons  
**Permittable Volume:** No fish concern

### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total	Total	Source
					Hardness [CaCO <sub>3</sub> ] (mg/l)	Dissolved Solids (mg/l)	

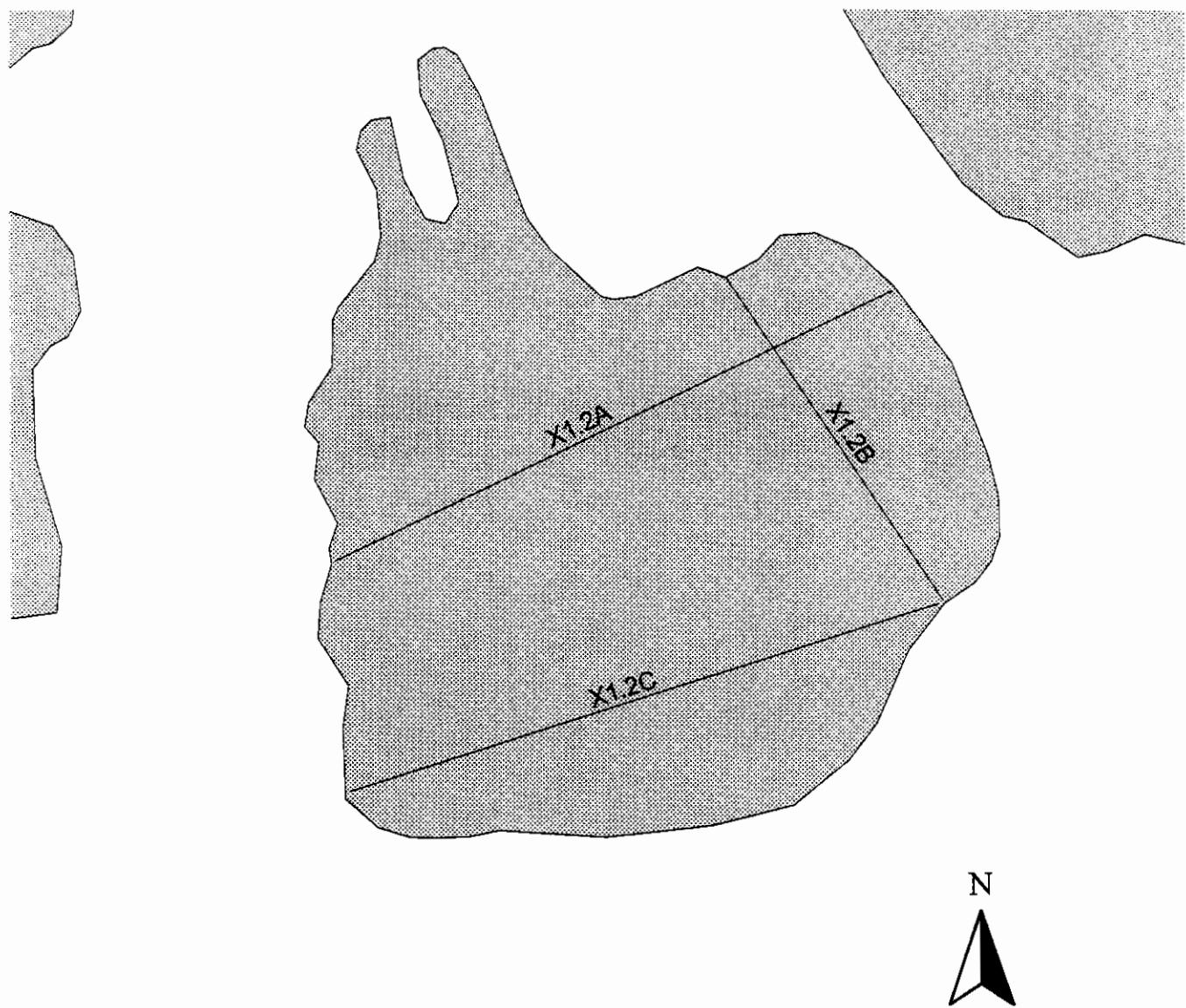
### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 19 99	6.2	None	0





**X1.2**



0    300    600    900    1200    1500    Feet

**Lake X1.2**

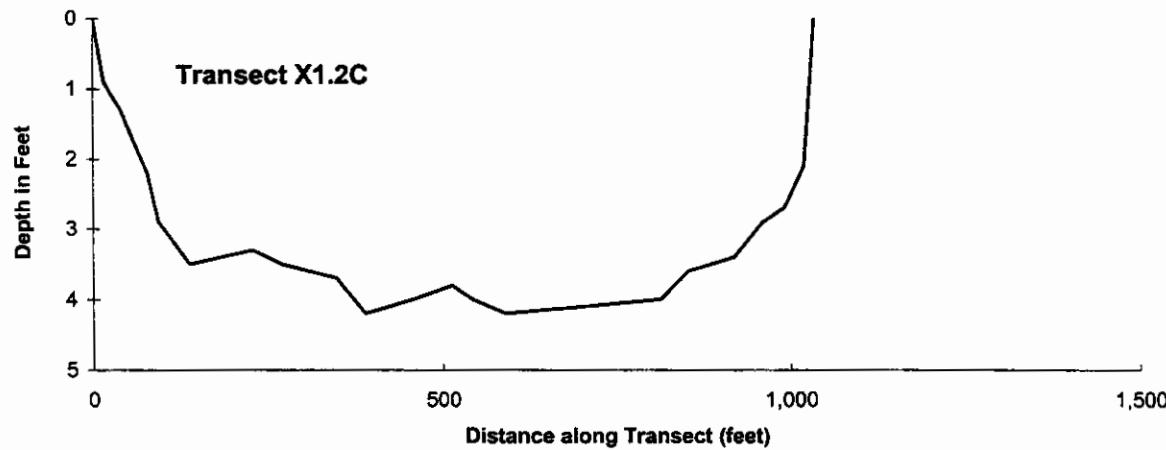
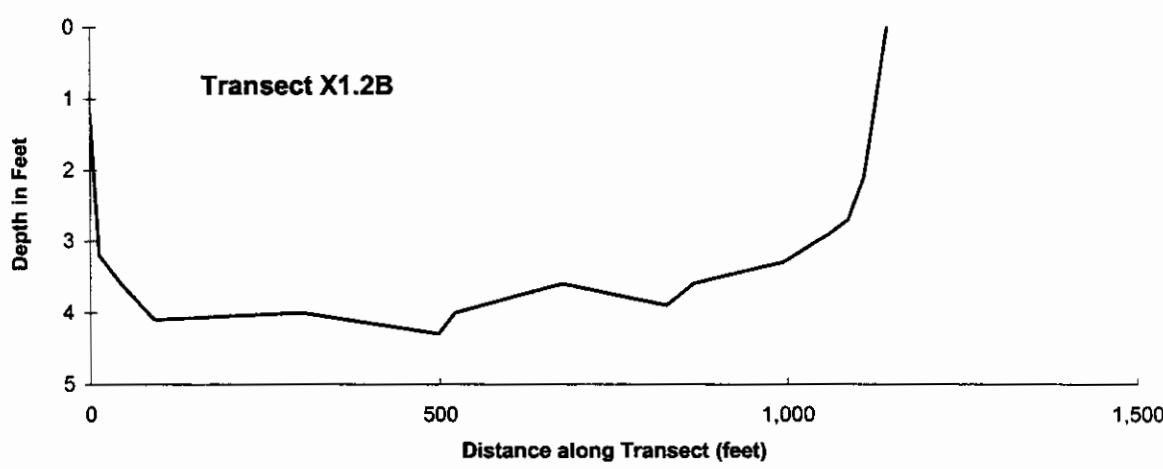
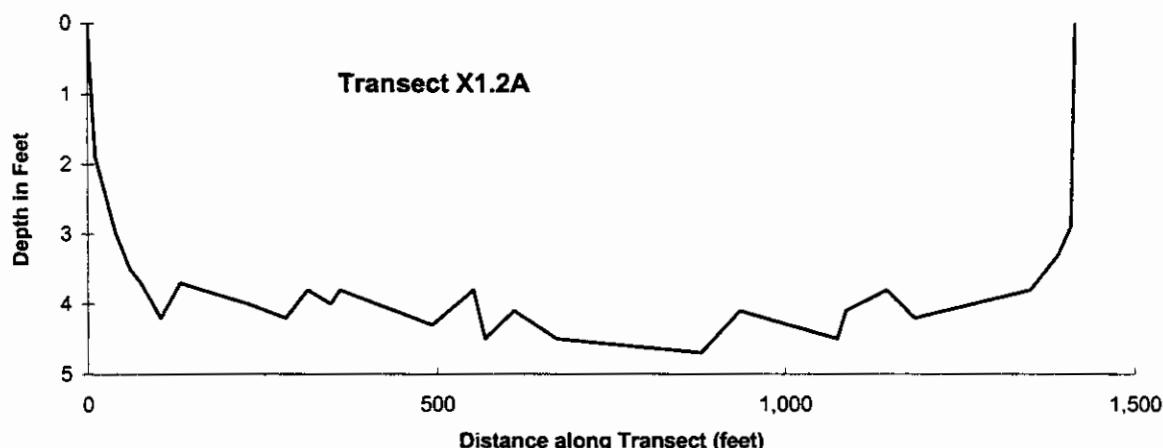
**Other Names:** L9801  
**Location:** 70°16.00'N 151°09.80'W  
**USGS Quad Sheet:** Harrison Bay B-2: T11N R4E Sect. 32  
**Habitat:** Tundra lake  
**Area:** 40 acres  
**Maximum Depth:** 5 feet  
**Active Outlet:** No  
**Spec. Conductance:** 180  $\mu\text{S}/\text{cm}$   
**pH:** 8.1  
**Calculated Volume:** 21.6 million gallons  
**Permittable Volume:** No fish concern

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source

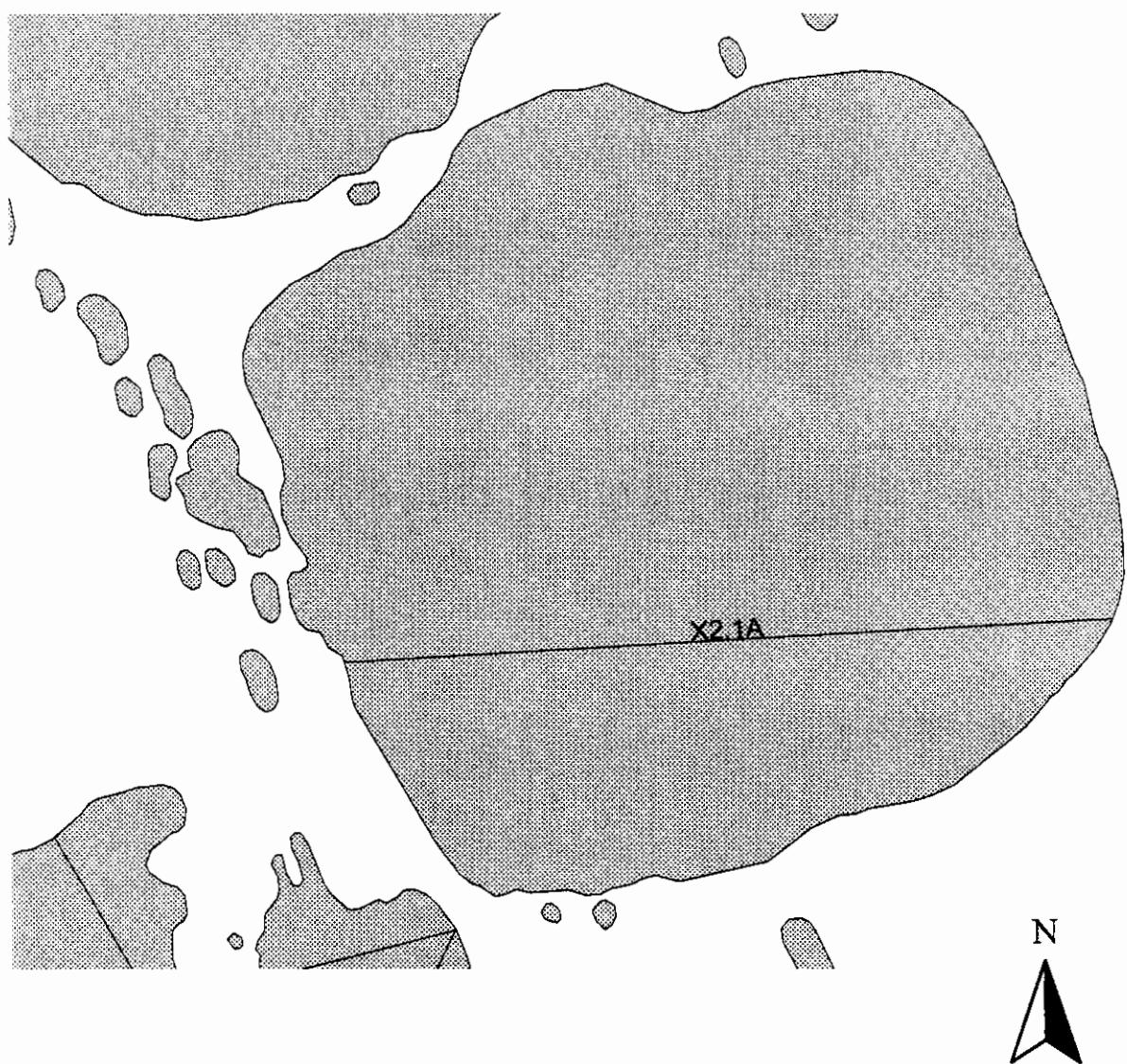
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 19 99	6.1	None	0





**X2.1**



0 1000 2000 3000 4000 5000 Feet

### Lake X2.1

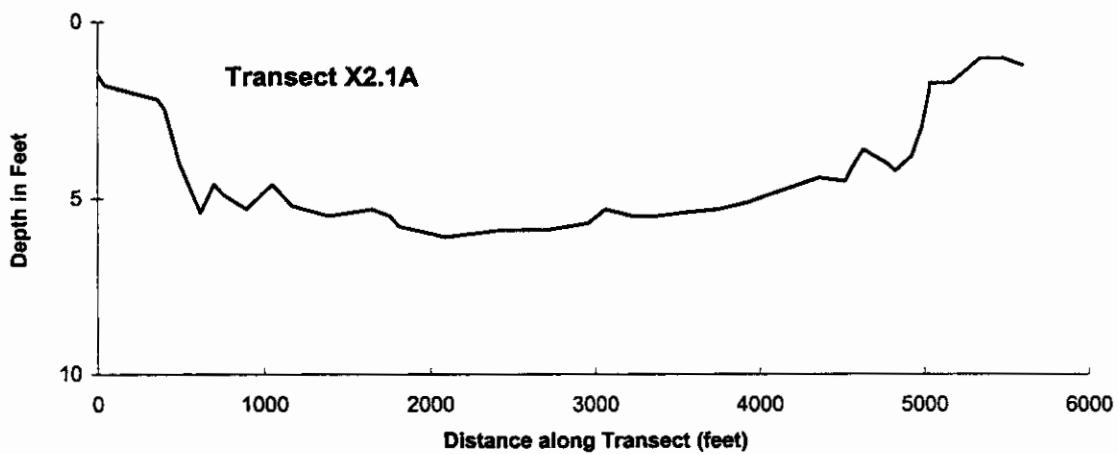
**Other Names:** L9307  
**Location:** 70°16.25'N 151°08.00'W  
**USGS Quad Sheet:** Harrison Bay B-2: T11N R4E Sect. 28  
**Habitat:** Tundra Lake  
**Area:** 650 acres  
**Maximum Depth:** 6.1 feet  
**Active Outlet:** No  
**Spec. Conductance:** 230  $\mu\text{S}/\text{cm}$   
**pH:** 8.0  
**Calculated Volume:** 426.3 million gallons  
**Permittable Volume:** No fish concern

#### Water Quality:

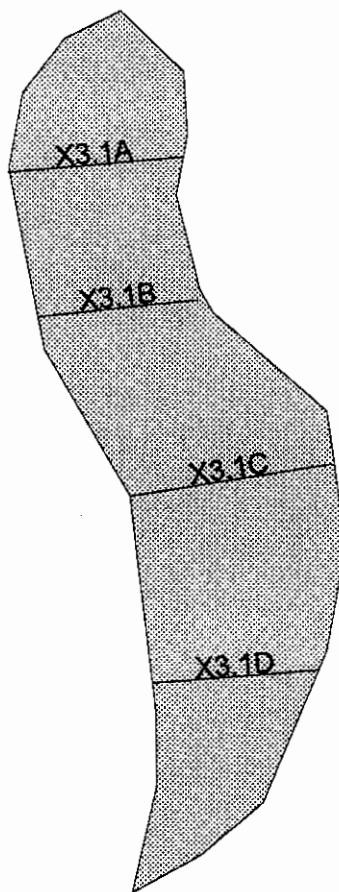
Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness	Total Dissolved	Source
					[CaCO <sub>3</sub> ]	Solids (mg/l)	
1999	9.9	4.9	8.9	4.9	42.4	52.0	this study

#### Catch Record:

Gear	Date	Effort (hours)	Species	Number
				Caught
Gill Net	Jul 31 99	4.1	None	0



# X3.1



0 250 500 Feet

**Lake X3.1**

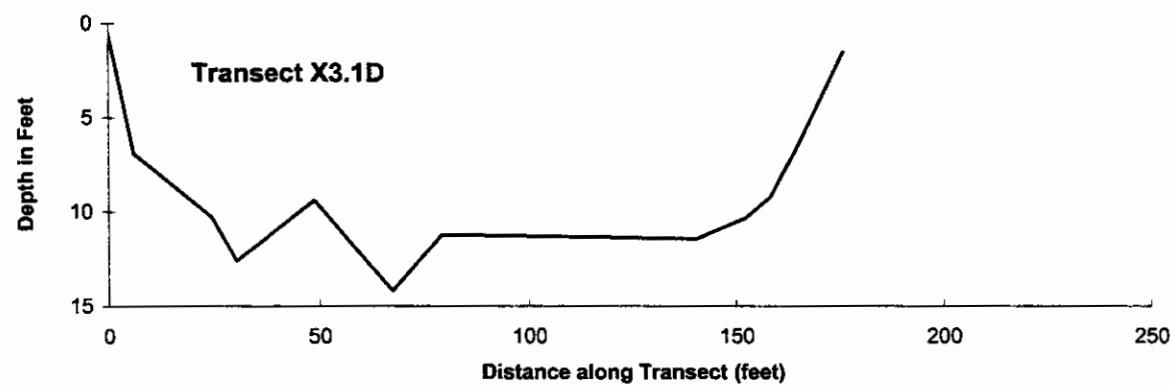
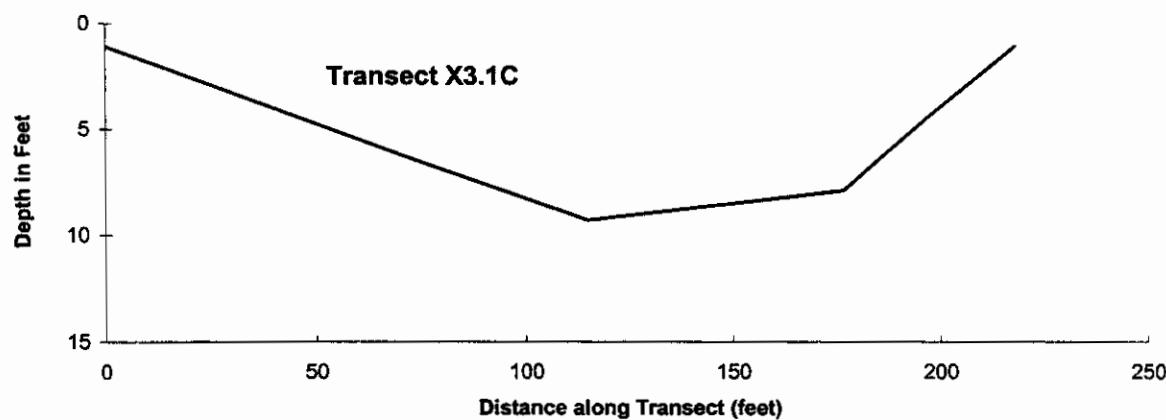
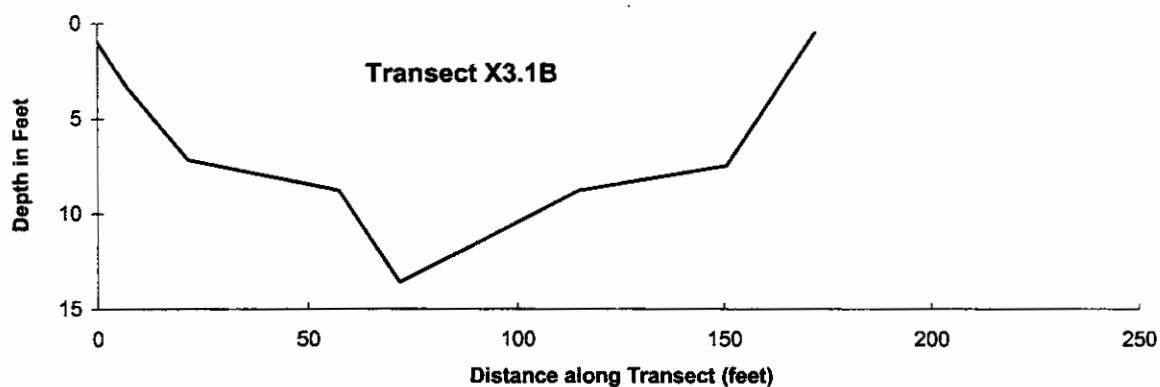
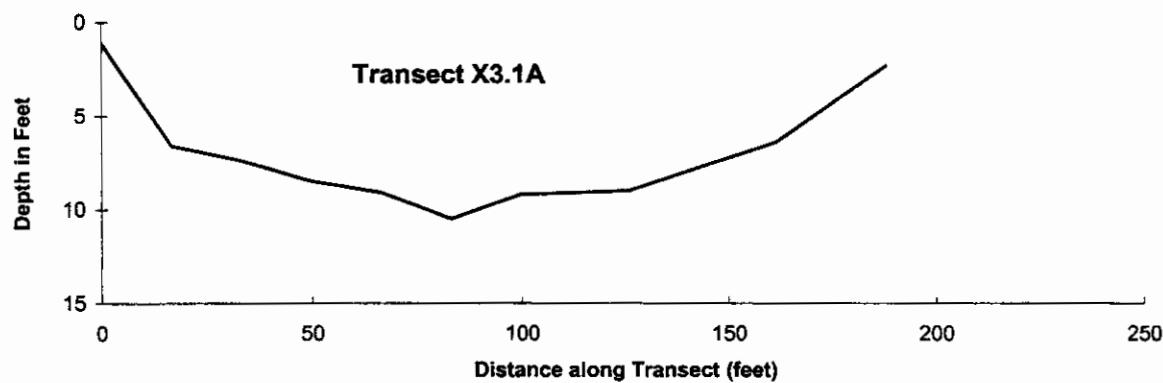
**Other Names:** L9808  
**Location:** 70°16.43'N 151°05.57'W  
**USGS Quad Sheet:** Harrison Bay B-2: T11N R4E Sect. 27  
**Habitat:** Drainage Lake  
**Area:** 5.0 acres  
**Maximum Depth:** 14.2 feet  
**Active Outlet:** Yes  
**Spec. Conductance:** 153 µS/cm  
**pH:** 8.2  
**Calculated Volume:** 7.7 million gallons  
**Permittable Volume:** 0.6 million gallons

**Water Quality:**

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness	Total Dissolved Solids (mg/l)	Source
					[CaCO <sub>3</sub> ] (mg/l)		

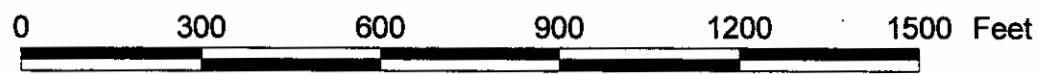
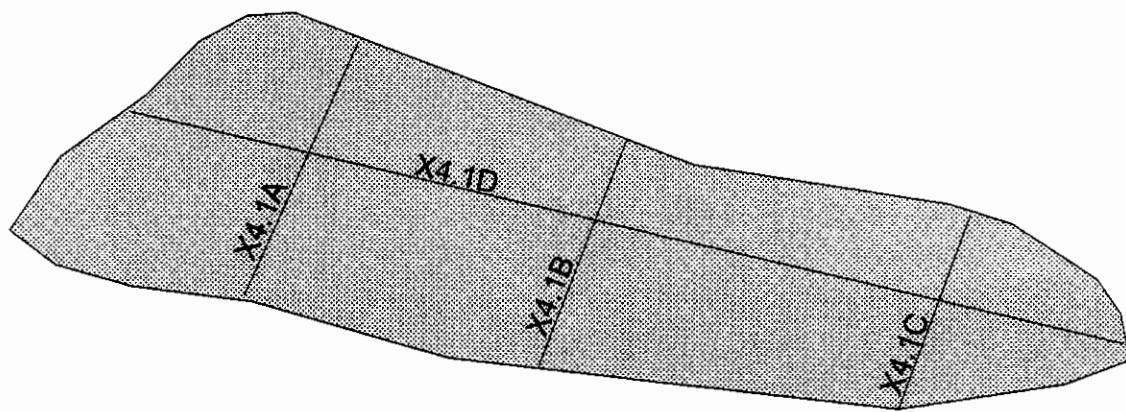
**Catch Record:**

Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Aug 4 99	1.8	Arctic grayling	1	142





# X4.1



### Lake X4.1

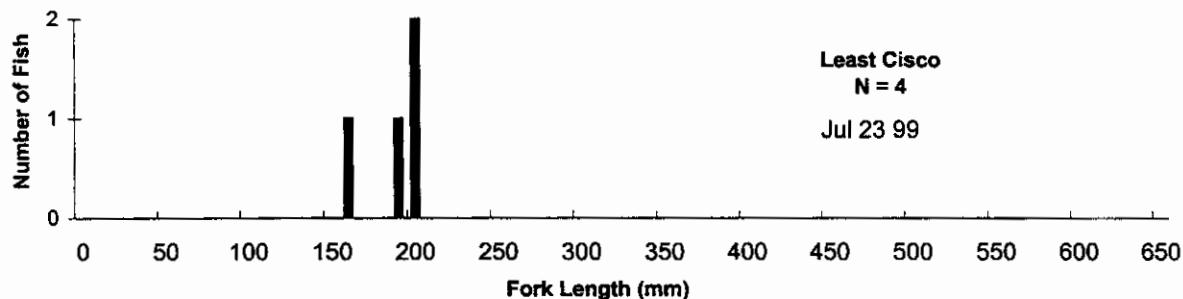
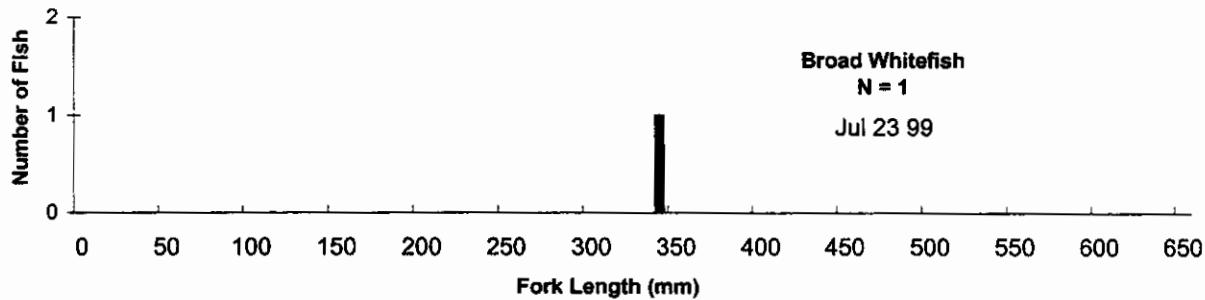
**Other Names:** L9902  
**Location:** 70°16.49'N 151°03.22'W  
**USGS Quad Sheet:** Harrison Bay B-2: T11N R4E Sect. 26  
**Habitat:** Perched lake (frequent flooding)  
**Area:** 16 acres  
**Maximum Depth:** 16.6 feet  
**Active Outlet:** No  
**Spec. Conductance:** 171  $\mu\text{S}/\text{cm}$   
**pH:** 8.0  
**Calculated Volume:** 28.1 million gallons  
**Permittable Volume:** 2.4 million gallons

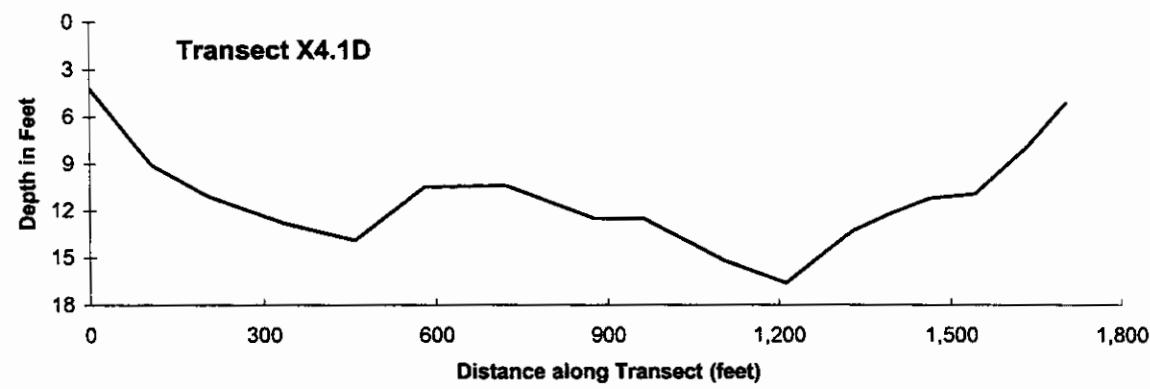
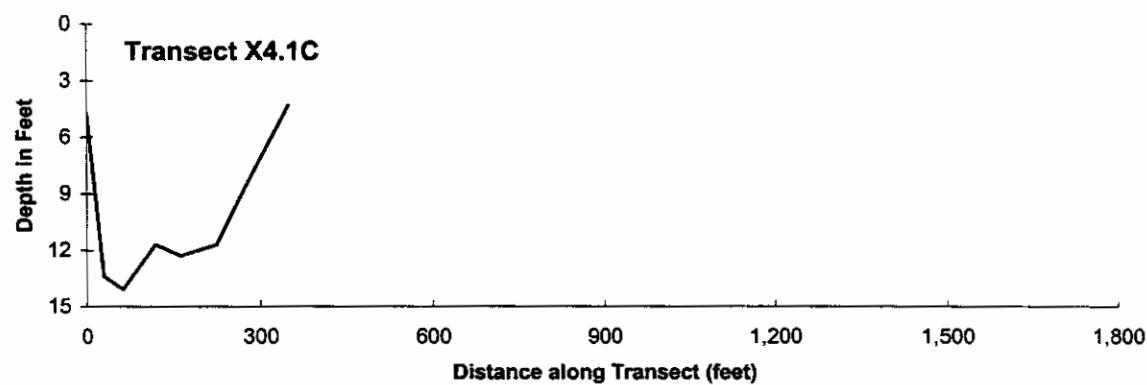
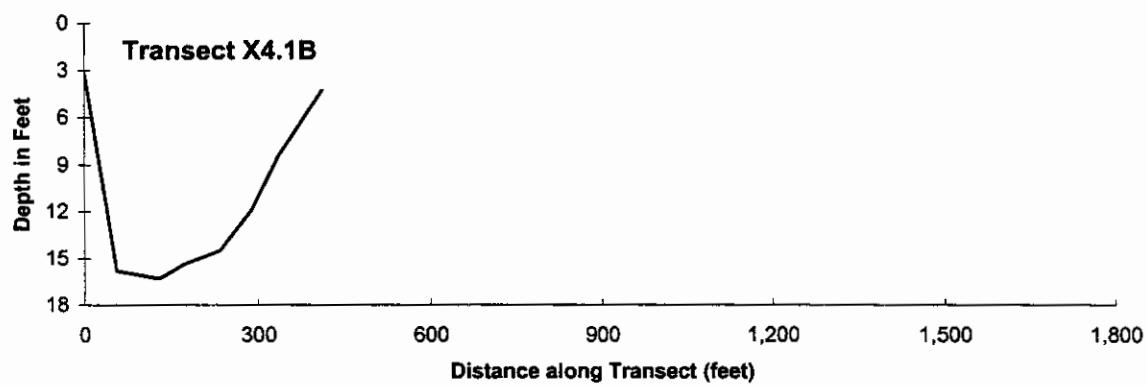
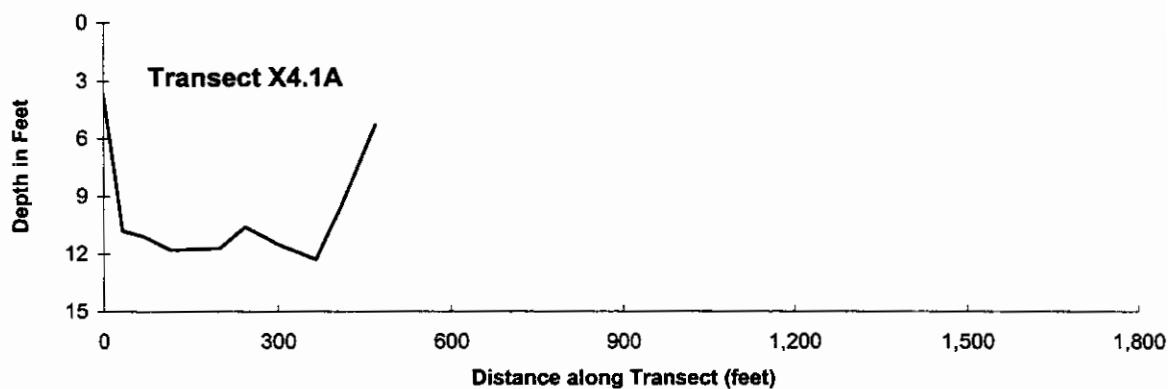
#### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness [CaCO <sub>3</sub> ] (mg/l)	Total Dissolved Solids (mg/l)	Source
						Dissolved Solids (mg/l)	
1999	20.7	11.7	12.4	6.5	57.6	88.0	this study

#### Catch Record:

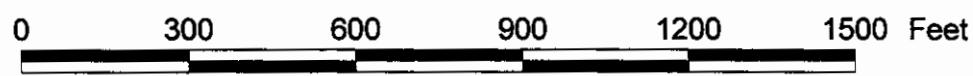
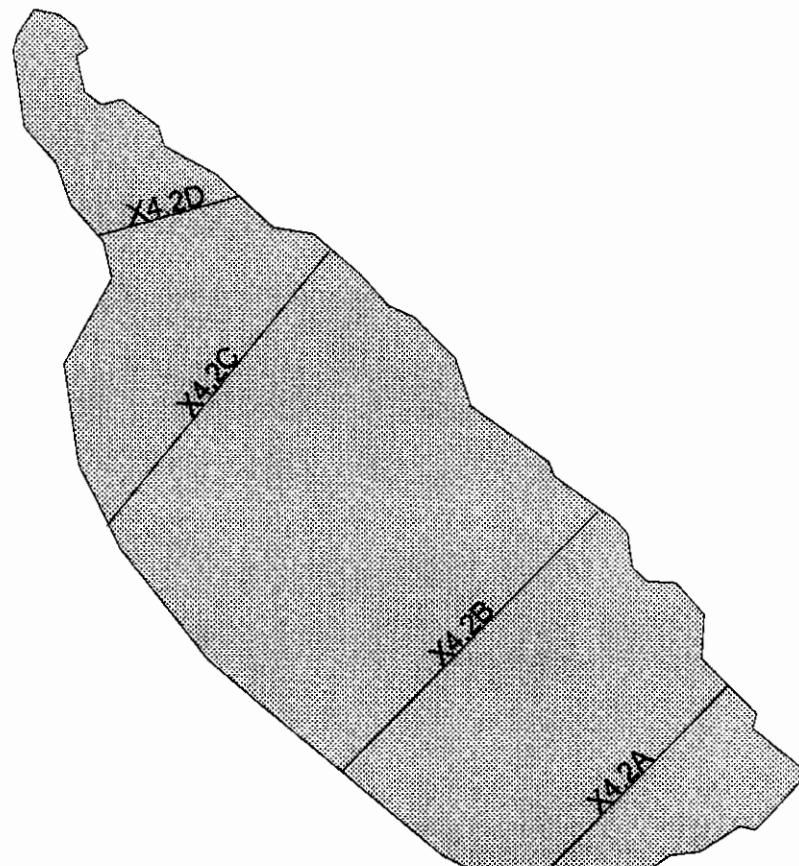
Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gill Net	Jul 23 99	0.6	Broad whitefish Least cisco	1 4	340 167-205







**X4.2**



## Lake X4.2

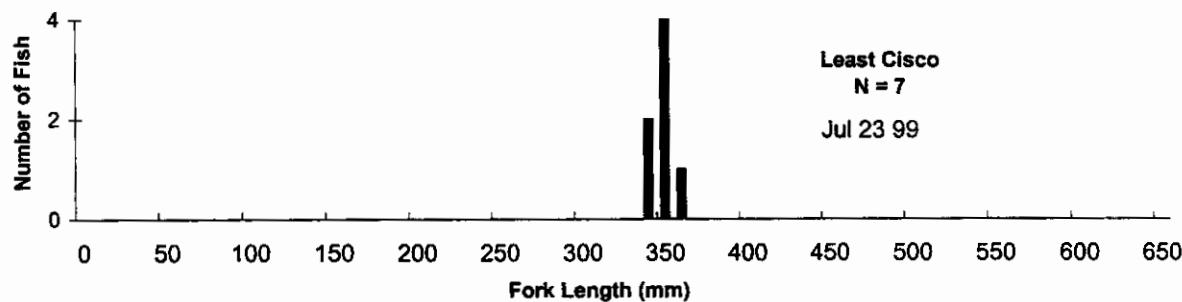
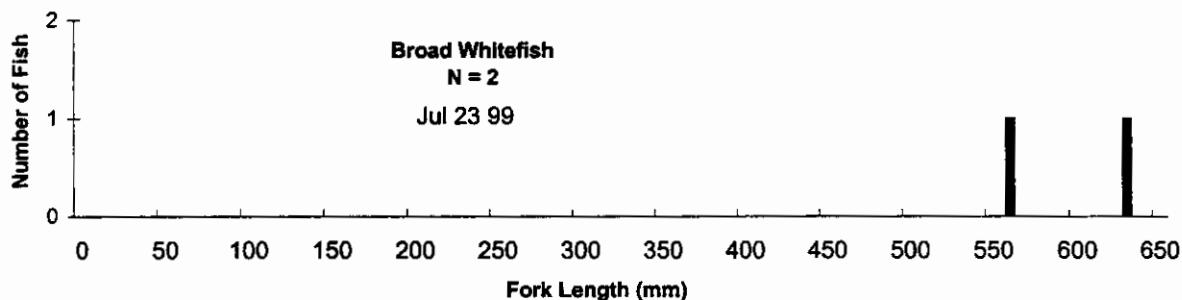
**Other Names:** L9901  
**Location:** 70°16.84'N 151°01.72'W  
**USGS Quad Sheet:** Harrison Bay B-2: T11N R4E Sect. 25  
**Habitat:** Perched lake (frequent flooding)  
**Area:** 16 acres  
**Maximum Depth:** 25.0 feet  
**Active Outlet:** No  
**Spec. Conductance:** 312  $\mu\text{S}/\text{cm}$   
**pH:** 8.2  
**Calculated Volume:** 43.7 million gallons  
**Permittable Volume:** 4.7 million gallons

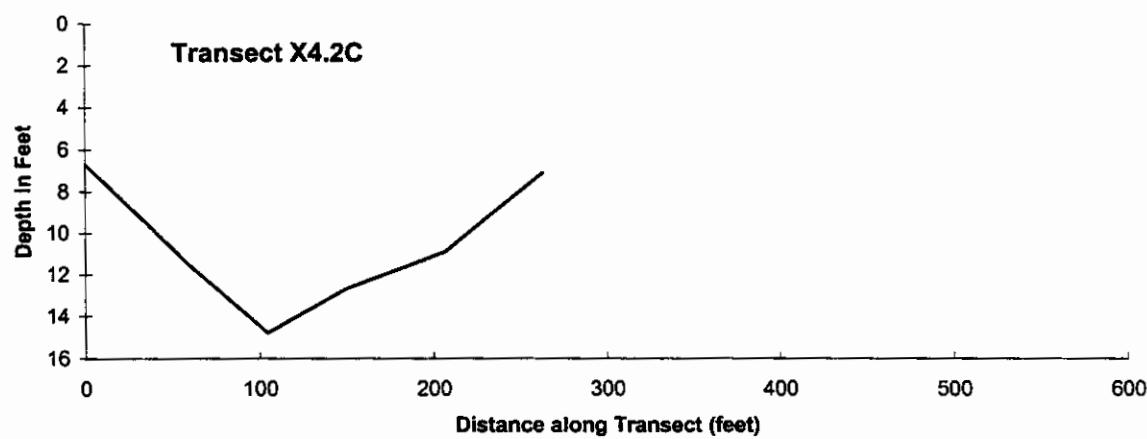
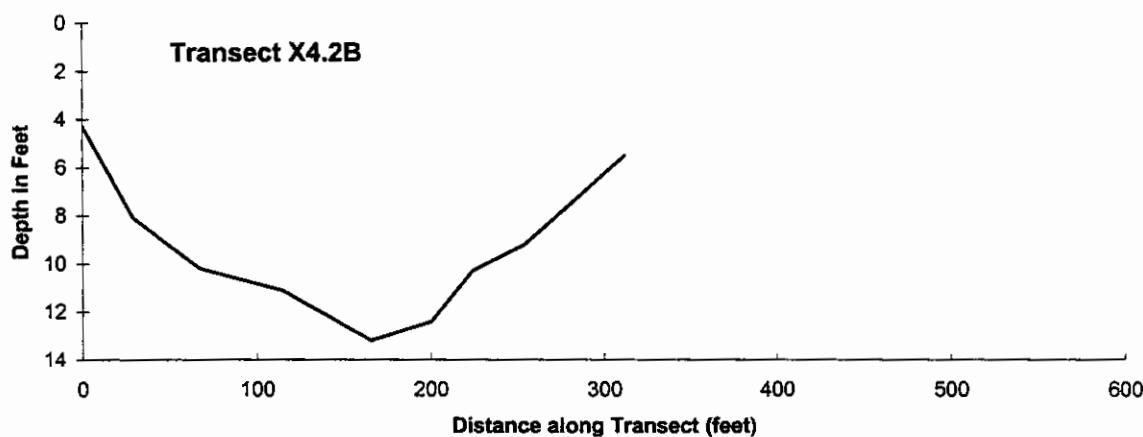
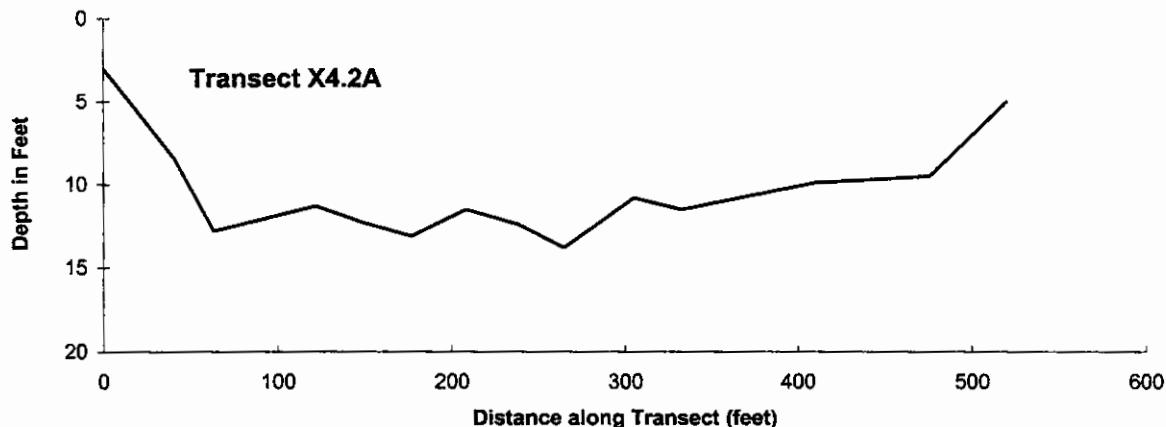
### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Hardness [CaCO <sub>3</sub> ] (mg/l)	Total	Total	Source
						Dissolved Solids (mg/l)		
1999	49.1	22.5	19.8	12.6	101.0	154.0		this study

### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught	Fork Length (mm)
Gillnet	Jul 23 99	1.6	Broad whitefish	2	560, 630
			Least cisco	7	346-364







# Y2.1



0    800    1600    2400    3200    4000    Feet

A horizontal scale bar representing distance in feet, ranging from 0 to 4000. The scale bar is divided into segments of 800 feet each, with tick marks at 0, 800, 1600, 2400, 3200, and 4000.

### Lake Y2.1

**Other Names:** L9807  
**Location:** 70°16.25'N 151°08.00'W  
**USGS Quad Sheet:** Harrison Bay B-2: T11N R4E Sect. 28  
**Habitat:** Tundra lake  
**Area:** 94 acres  
**Maximum Depth:** 8.2 feet  
**Active Outlet:**  
**Spec. Conductance:** 161  $\mu\text{S}/\text{cm}$   
**pH:** 7.9  
**Calculated Volume:** 83.0 million gallons  
**Permittable Volume:** 1.8 million gallons

#### Water Quality:

Year of Test	Chloride (mg/l)	Sodium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Total Hardness	Total Dissolved Solids (mg/l)	Source
					[CaCO <sub>3</sub> ] (mg/l)		
1998	12.9	4.4	20.1	3.7	65.5	96.0	J. Lobdell

#### Catch Record:

Gear	Date	Effort (hours)	Species	Number Caught
Gill Net	Jul 31 99	5.0	None	0

