DETAILED LAKE SURVEY

Field Form

F.R.B.D. Division
Limnology Section

Lake identification (note name, drainage, bay or fjord receiving drainage) Crosswind

Sample station designation

end depth 23 (m). Weather & lake surface conditions calm, partial overcast w/ sun, snow continous w/ 15 cm crust, drifts

Date 5/3/82 Name(s) of sampling personnel Holder

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Level Up	Down
Incidence							
Surface	0.1	11.6					
0.5	0.1	11.7					
1.0	0.3	11.8					
1.5	1.0	12.0					
2.0	1.2	11.8					
2.5	1.4	11.8					
3.0	1.5	11.6					
3.5	1.6	11.5					
4.0	1.7	11.3					
4.5	1.6	11.3					
5.0	1.7	11.2					
6.0	1.8	11.1					
7.0	1.8	10.9					
8.0	1.9	10.9					
9.0	2.0	10.8					
10.0	2.0	10.7					
11.0	2.0	10.6					
12.0	2.2	10.5					
13.0	2.2	10.3					
14.0	2.3	10.2					
15.0	2.5	10.2					
16.0	2.6	10.2					
17.0	2.7	10.1					
18.0	2.7	10.0					
19.0	2.8	9.8					
20.0	2.9	9.8					
21.0	3.0	9.5					
22.0	3.0	9.3					

Snow 15 cm

ICE 1 M

AIR Temp -0.5°C

HACH 2.0 x 5.81 = 11.62
2.0 x 5.81 = 11.62
$\bar{X}$ = 11.62

[illegible] samples collected for lab analyses
( ) and ( ) Samples filtered in lab or field

Comments

Secchi disc: Depth(s) disc disappeared/reappeared / (m) Mean disc reading (m)

BIOLOGICAL PARAMETERS:

Algal production: ^{14}C conducted Dosimetry badges worn (initial of sampling personnel)

Vial Number	Depth (m)	Bottle	Filter Set	Filter Spilled
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		

^{14}C samples filtered in lab or field .

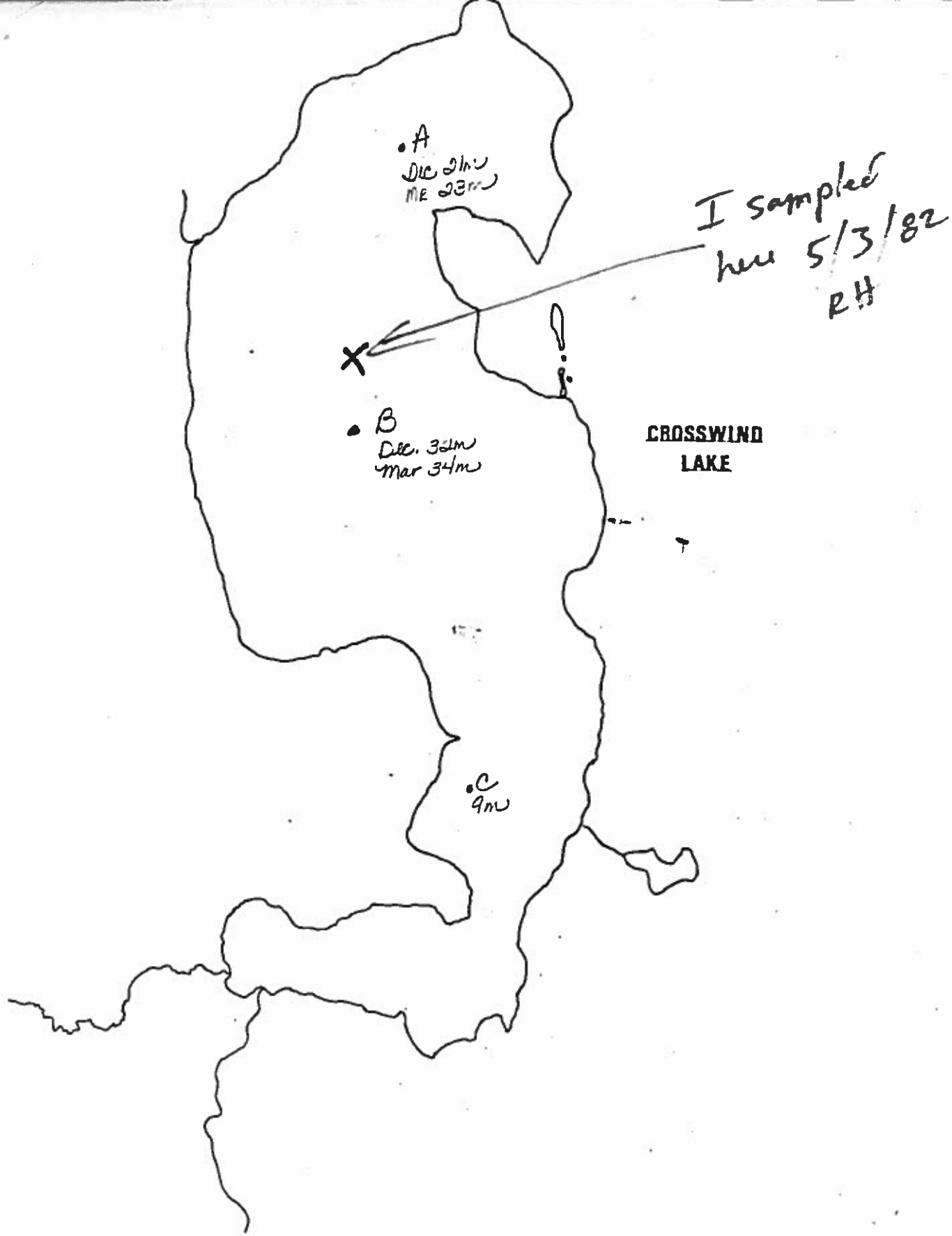
Periphyton: Site designation and/or location of colonization plates

Incubation time (3 wk) (6 wk). Was one plate contents preserved . Was other plate filtered for Chl a in lab or field . Comments

Zooplankton: Number of tows taken Tow depth (m) Tow angle (vertical or specify angle) Net size Each net processed separately. Comments:

Benthic invertebrates: Site designation and/or location of Hester-Dendy samplers

Additional Information or Comments:


A
Dec 21m
Mar 23m
I sampled here 5/3/82 RH
B
Dec. 32m
Mar 34m
CROSSWIND LAKE
C
9m

6-9

DETAILED LAKE SURVEY
Field Form

F.R.E.D. Division
Limnology Section

Lake identification (note name, drainage, bay or fjord receiving drainage) Crosswind

and depth 1 21 (m). Sample station designation

Weather & lake surface conditions Windy 1' waves

Date _____ Name(s) of sampling personnel _____

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/1)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Leve Up	Dow
Incidence							
Surface							
0.5							
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
6.0							
7.0							
8.0							
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							
16.0							
17.0							
18.0							
19.0							
20.0							

Comments: Got Blown off

(over)

Water samples collected for lab analyses _____ Depths samples were taken _____ (m) and _____ (m) Samples filtered in lab _____ or field _____

Comments _____

Secchi disc: Depth(s) disc diappeared/reappeared 5 / _____ (m) Mean disc readi..g _____ (m)

BIOLOGICAL PARAMETERS:

Phytoplankton: ^{14}C conducted _____ Dosimetry badges worn (initial of sampling personnel) _____.

Vial Number	Depth (m)	Bottle	Time Set	Time Pulled
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		

^{14}C samples filtered in lab _____ or field _____.

Periphyton: Site designation and/or location of colonization plates _____

Incubation time _____ (3 wk) _____ (6 wk). Was one plate contents preserved _____. Was other plate filtered for Chl a _____ in lab _____ or field _____. Comments _____

Zooplankton: Number of tows taken _____ Tow depth _____ (m) Tow angle _____ (vertical or specify angle) _____ Net size _____

Each tow preserved separately. _____ Comments: _____

Benthic invertebrates: Site designation and/or location of Hester-Dendy samplers

Incubation time _____ Comments _____

Additional Information or Comments: _____

DETAILED LAKE SURVEY
Field Form

F.R.E.D. DIVISION
Limnology Section

Lake identification (note name, drainage, bay or fjord receiving drainage) Crosswind Lake → Muskwa River drainage Sample station designation and depth sta 1 ; 21m (m). Weather & lake surface conditions clear, air temp. -31.5°C wind ~5

Date _____ Name(s) of sampling personnel _____

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l) (winkler)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Solar Illuminence (Foot Candles) Down	% Incident Light Level Up	% Incident Light Level Down
Incidence					180		
Surface	0.8	12.2			2.6		
0.5					8.5		
1.0	1.1				6.4		
1.5					4.0		
2.0	1.2				2.7		
2.5					1.9		
3.0	1.2						
3.5							
4.0	1.3	meter NOT FUNCTIONING					
4.5							
5.0	1.2						
6.0							
7.0							
8.0							
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							
16.0							
17.0							
18.0							
19.0							
20.0							

Comments: snow depth 22cm
ice depth 35cm

(over)

Water samples collected for lab analyses _____ Depths samples were taken _____ / (m) and 15 (m). Samples filtered in lab _____ or field _____

Comments _____

Secchi disc: Depth(s) disc diappeared/reappeared 5' / 5' (m) Mean disc reading 5' (m)

BIOLOGICAL PARAMETERS:

Phytoplankton: ^{14}C conducted _____ Dosimetry badges worn (initial of sampling personnel) _____.

Vial Number	Depth (m)	Bottle	pH	Time Set	Time Pulled
		Light			
		Light			
		Dark			
		Kill			
		Light			
		Light			
		Dark			
		Kill			
		Light			
		Light			
		Dark			
		Kill			

^{14}C samples filtered in lab _____ or field _____.

Periphyton: Site designation and/or location of colonization plates _____

Incubation time _____ (3 wk) _____ (6 wk). Was one plate contents preserved _____. Was other plate filtered for Chl a _____ in lab _____ or field _____. Comments _____

Zooplankton: Number of tows taken 2 Tow depth 20 (m) Tow angle (vertical or specify angle) _____ Net size 20 cm dia. 153 µm

Each tow preserved separately. yes Comments: freezing problems - rolling in sample problems

Benthic invertebrates: Site designation and/or location of Hester-Dendy samplers

Incubation time _____ Comments _____

Additional Information or Comments:

external cold inhibits YSI - temp. readings possibly wrong - no readings for D.O - name reason eventually stopped working altogether.

Probe tends to freeze

DETAILED LAKE SURVEY

Field Form

F.R.E.D. Division
Limnology Section

Lake identification (note name, drainage, bay or fjord receiving drainage) = Crosswind Lake Sample station designation and depth Sta. 2, 32m (m). Weather & lake surface conditions ice fog, air Temp. -27°C Wind ~5

Date 12-10-81 Name(s) of sampling personnel Collins, Holder

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Solar Illuminence (Foot Candles) Down	% Incident Light Level Up	% Incident Light Level Down
Incidence					120		
Surface					3.2		
0.5					7.6		
1.0					5.5		
1.5					2.9		
2.0					1.7		
2.5					0.96		
3.0							
3.5							
4.0							
4.5							
5.0							
6.0							
7.0							
8.0							
9.0							
10.0							
11.0							
12.0							
13.0	YSI NOT						
14.0							
15.0							
16.0							
17.0	FUNCTIONING						
18.0							
19.0							
20.0							

Comments: snow depth 21cm
ice depth ~35cm

(over)

and 85 (m). Samples filtered in lab ✓ or field

Comments

Secchi disc: Depth(s) disc diappeared/reappeared 4.5 / 4.5 (m) Mean disc reading 4.5 (m)

BIOLOGICAL PARAMETERS:

Phytoplankton: ^{14}C conducted _____ Dosimetry badges worn (initial of sampling personnel) _____.

Vial Number	Depth (m)	Bottle	pH	Time Set	Time Pulled
		Light			
		Light			
		Dark			
		Kill			
		Light			
		Light			
		Dark			
		Kill			
		Light			
		Light			
		Dark			
		Kill			

^{14}C samples filtered in lab _____ or field _____.

Periphyton: Site designation and/or location of colonization plates _____

Incubation time _____ (3 wk) _____ (6 wk). Was one plate contents preserved _____. Was other plate filtered for Chl a _____ in lab _____ or field _____. Comments _____

Zooplankton: Number of tows taken 2 Tow depth 30 (m) Tow angle (vertical or specify angle) _____ Net size 80cm dia, 153µm

Each tow preserved separately. yes Comments: _____

Benthic invertebrates: Site designation and/or location of Hester-Dendy samplers _____

Incubation time _____ Comments _____

Additional Information or Comments: _____

Alaska Department of Fish & Game - Limnology
Sample Inventory

Lake CROSSWIND Date Sampled 12-10-81 Sampling Personnel Collins, Holder Date Received in Lab

Station	Depth (m)	Water Samples: Nutrients (500 ml Filt/Frozen)	Water Samples: pH, Cond. (500 ml Unfilt/Refrig)	Water Samples: Total P Total N (125 mls Unfilt/Frozen)	Particulate: N (1 l)	Particulate: P (1 l)	Particulate: C (1 l)	Particulate: Chl a (2 l)	Metals (125 mls Unfiltered)	14C (# Vials)	Zooplankton (# Samples)	Benthic Invertebrates (# Samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
1	1	1	1	1	1	1	1	1						
	15	1	1	1	1	1	1				2			
	20													
2	1	1	1	1	1	1	1	1						
	25	1	1	1	1	1	1				2			
	30													
		1 SNOW SAMPLE												

Alaska Department of Fish & Game - Limnology
Sample Inventory

Lake CROSSWIND LAKE Date Sampled 4/17/85 Sampling Personnel MARTINEK/STAMMILLER Date Received in Lab

Station	Depth (m)	Water Samples: Nutrients (500 ml Filt/Frozen)	Water Samples: pH, Cond. (500 ml Unfilt/Refrig)	Water Samples: Total P Total N (125 mls Unfilt/Frozen)	Particulate: N (1 l)	Particulate: P (1 l)	Particulate: C (1 l)	Particulate: Chl a (2 l)	Metals (125 mls Unfiltered)	^{14}C (# Vials)	Zooplankton (# Samples)	Benthic Invertebrates (# Samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
I	1	✓	✓	✓	✓	✓	✓	✓						1
	9	✓	✓	✓	✓	✓	✓	✓			2			
II	1	✓	✓	✓	✓	✓	✓	✓						1
	12	✓	✓	✓	✓	✓	✓	✓			2			
III	1	✓	✓	✓	✓	✓	✓	✓						1
	8	✓	✓	✓	✓	✓	✓	✓			2			

Field Form

Limnology Section

Lake identification (note name, drainage, bay or fjord receiving draingage) CROSSWIND LAKE Sample station designation and depth STATION I 15m (m). Weather & lake surface conditions SUNNY, CALM

Air Temp 12° C, CONTINUOUS SNOW COVER, 12" SNOW DEPTH, 30" ICE THICKNESS

Date 4/17/85 Name(s) of sampling personnel MARTINEK / STADTMILLER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Solar Illuminence (Foot Candles) Down	% Incident Light Level Up	% Incident Light Level Down
Incidence		Hach Kit 11.05		5500	1500		
Surface	0	10.9		3600	600		
0.5				620	120		
1.0	-1	10.6		300	14		
1.5				140	5.8		
2.0	0	10.6		80	.3		
2.5				39	.18		
3.0	1	10.4		26	.13		
3.5				16			
4.0	1.5	10.4		12			
4.5							
5.0	2	10.2					
6.0	2	10.2					
7.0	2	10.1					
8.0	2	10.1					
9.0	2	10					
10.0	2	9.8					
11.0							
12.0	2.5	9.8					
13.0							
14.0	2.5	9.7					
15.0							
16.0							
17.0							
18.0							
19.0							
20.0							

Comments: YSI D.O. meter, Protomatic light meter

(over)

Water samples collected for lab analysis HAHN Depths samples were taken
1 (m) and 9 (m) Samples filtered in lab lab or field

Comments Filtered @ 8:30 AM 7/18/85 stored in refrigeration on freeze

Secchi disc: Depth(s) disc diappeared/reappeared 5 / 4.5 (m) Mean disc readi..g 4.75 (m)

BIOLOGICAL PARAMETERS:

Phytoplankton: ^{14}C conducted Dosimetry badges worn (initial of sampling personnel)

Vial Number	Depth (m)	Bottle	Time Set	Time Pulled
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		

^{14}C samples filtered in lab or field

Periphyton: Site designation and/or location of colonization plates

Incubation time (3 wk) (6 wk). Was one plate contents preserved . Was other plate filtered for Chl a in lab or field . Comments

Zooplankton: Number of tows taken 2 Tow depth 12 (m) Tow angle (vertical or specify angle) vertical Net size 8.0" 153u

Each tow preserved separately. yes Comments: preserved in formalin + sucrose

Benthic invertebrates: Site designation and/or location of Hester-Dendy samplers

Incubation time Comments

Additional Information or Comments:

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) CROSSWIND LAKE Sample station designation and depth STATION II 17m (m). Weather & lake surface conditions SUNNY, Calm AIR TEMP. 14°C, CONTINUOUS SNOW COVER, 8" SNOW DEPTH, 30" ICE THICKNESS

Date 4/17/85 Name(s) of sampling personnel MARTINEK / STADTMILLER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Solar Illuminence (Foot Candles) Down	% Incident Light Level Up	% Incident Light Level Down
Incidence				6300	3200		
Surface	0	9.8		4000	600		
0.5				550	200		
1.0	0	9.6		260	26		
1.5				120	11		
2.0	0	10.0		68	1.6		
2.5				40	1.4		
3.0	1	10		25	1.2		
3.5							
4.0	2	9.8					
4.5							
5.0	2	9.8					
6.0	2	9.8					
7.0	2	9.6					
8.0	2	9.6					
9.0	2.3	9.6					
10.0	2.5	9.6					
11.0	2.5	9.6					
12.0	2.5	9.5					
13.0							
14.0	2.8	9.5					
15.0							
16.0							
17.0							
18.0							
19.0							
20.0							

Comments: YSI D.O. meter, Protomatic light meter

(over)

Water samples collected for Chl a _____

1 (m) and 12 (m) Samples filtered in lab lab or field _____

Comments Samples filtered @ 9:15 am 4/18/85 stored in refrigerator and freezer

Secchi disc: Depth(s) disc diappeared/reappeared + / 3.5 (m) Mean disc readi..g 3.75(m)

BIOLOGICAL PARAMETERS:

Phytoplankton: ^{14}C conducted _____ Dosimetry badges worn (initial of sampling personnel) _____.

Vial Number	Depth (m)	Bottle	Time Set	Time Pulled
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		

^{14}C samples filtered in lab _____ or field _____.

Periphyton: Site designation and/or location of colonization plates _____

Incubation time _____ (3 wk) _____ (6 wk). Was one plate contents preserved _____. Was other plate filtered for Chl a _____ in lab _____ or field _____. Comments _____

Zooplankton: Number of tows taken 2 Tow depth 14 (m) Tow angle _____ (vertical or specify angle) vertical Net size 8.0" 153 µ

Each tow preserved separately. yes Comments: preserved in formalin + sucrose

Benthic invertebrates: Site designation and/or location of Hester-Dendy samplers _____

Incubation time _____ Comments _____

Additional Information or Comments: _____

Field Form

Limnology Section

Lake identification (note name, drainage, bay or fjord receiving draingage) Crossling Lake Sample station designation and depth STATION III 12m (m). Weather & lake surface conditions SUNNY/calm

air temp. 7° c, CONTINUOUS SNOW COVER, SNOW DEPTH 13", ICE THICKNESS 32"

Date 4/17/85 Name(s) of sampling personnel MARTINEK / STADTMILLER.

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Level Up	Down
Incidence				3400	2000		
Surface	0	9.2		1600	150		
0.5				450	11		
1.0	0	8.8		200	6		
1.5				100	.32		
2.0	0	9.0		52	.19		
2.5				39	.14		
3.0	1	9.2		19			
3.5							
4.0	1.5	9.2					
4.5							
5.0	1.8	8.8					
6.0	2	8.6					
7.0	2	8					
8.0	2.8	7.6					
9.0	3	7.4					
10.0	3	5					
11.0	3	3					
12.0							
13.0							
14.0							
15.0							
16.0							
17.0							
18.0							
19.0							
20.0							

Comments: Y.S.I. D.O. meter, Protomatic light meter, some clown cover during solar Illuminence readings

(over)

1 (m) and 8 (m) Samples filtered in lab lab or field

Comments samples filtered @ 10:15 AM 4/18/85 stored in refrigerator and freezer

Secchi disc: Depth(s) disc diappeared/reappeared 4 14.5 (m) Mean disc readi.g 4.35 (m)

BIOLOGICAL PARAMETERS:

Phytoplankton: ^{14}C conducted _____ Dosimetry badges worn (initial of sampling personnel) _____.

Vial Number	Depth (m)	Bottle	Time Set	Time Pulled
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		

^{14}C samples filtered in lab _____ or field _____.

Periphyton: Site designation and/or location of colonization plates _____

Incubation time _____ (3 wk) _____ (6 wk). Was one plate contents preserved _____. Was other plate filtered for Chl a _____ in lab _____ or field _____. Comments _____

Zooplankton: Number of tows taken 2 Tow depth 9m (m) Tow angle (vertical or specify angle) vertical Net size 8" 153 u

Each tow preserved separately. yes Comments: preserveared in formalin & sucrose

Benthic invertebrates: Site designation and/or location of Hester-Dendy samplers

Incubation time _____ Comments _____

Additional Information or Comments: _____

Alaska Department of Fish & Game - Limnology
Sample Inventory

Lake CROSSWIND LK Date Sampled 8/6/85 Sampling Personnel HOLDER / BERNARD Date Received in Lab

Station	Depth (m)	Water Samples: Nutrients (500 ml Filt/Frozen)	Water Samples: pH, Cond, (500 ml Unfilt/Refrig)	Water Samples: Total P Total N (125 mls Unfilt/Frozen)	Particulate: N (1 l)	Particulate: P (1 l)	Particulate: C (1 l)	Particulate: Chl a (2 l)	Metals (125 mls Unfiltered)	^{14}C (# Vials)	Zooplankton (# Samples)	Benthic Invertebrates (# Samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
1	1	✓	✓	✓	✓	✓	✓	✓						
	15	✓	✓	✓	✓	✓	✓				2			
	20													
2	1	✓	✓	✓	✓	✓	✓	✓						
	22	✓	✓	✓	✓	✓	✓				2			
	29													
3	1	✓	✓	✓	✓	✓	✓	✓						
	6	✓	✓	✓	✓	✓	✓	✓			2			

Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving draingage) CROSSWIND LK COPPER RIVER BASIN Sample station designatic= and depth STATION 3 8 (m). Weather & lake surface conditions CLEAR, SUNNY, VERY LITTLE WIND, NO WAVES

Date 8/6/85 Name(s) of sampling personnel HOLDER / BERNARD

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)		Dissolved Oxygen (mg/l)		% Oxygen Saturation	Solar Illuminence (lx) (Foot Candles)		% Incident Light Level	
	Duplicate	Replicate	Duplicate	Replicate		Up	Down	Up	Down
Incidence						6,200	730		
Surface	16.2	16.5	8.6	8.6		3,100	62		
0.5	15.0		8.5			1,900	30		
1.0	14.7	14.9	8.5	9.3		1,300	22		
1.5	14.5		8.7			1,000	12		
2.0	14.2	14.5	8.7	9.6		750	12		
2.5	14.0		8.6			520	7		
3.0	13.7	14.0	8.5	8.2		400	6.1		
3.5	13.5		8.4			280	7.0		
4.0	13.2	13.7	8.2	7.7		210	6.5		
4.5	13.2		8.0			170	4.7		
5.0	13.0	13.3	8.0	7.1		120	3.0		
6.0	12.5	12.5	7.7	6.7		71	2.5		
7.0	11.2	12.0	7.4	6.6		40	2.1		
8.0	11.2		6.5						
9.0									
10.0									
11.0									
12.0									
13.0									
14.0									
15.0									
16.0									
17.0									
18.0									
19.0									
20.0									

comments: HACH 1.5 × 5.81 = 8.7
1.45 × 5.81 = 8.4
$\bar{X}$ = 8.6

(over)

Water samples collected for lab analyses ✓ Depths samples were taken ____ (m) and 6 (m) Samples filtered in (lab) Gkennaller or field ____

Comments ____

Secchi disc: Depth(s) disc diappeared/reappeared 5.5 1 5 (m) Mean disc readi..g 5.25 (m)

BIOLOGICAL PARAMETERS:

Phytoplankton: ^{14}C conducted ____ Dosimetry badges worn (initial of sampling personnel) ____

Vial Number	Depth (m)	Bottle	Time Set	Time Pulled
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		

^{14}C samples filtered in lab ____ or field ____

Periphyton: Site designation and/or location of colonization plates ____

Incubation time ____ (3 wk) ____ (6 wk). Was one plate contents preserved ____. Was other plate filtered for Chl a ____ in lab ____ or field ____. Comments ____

Zooplankton: Number of tows taken 2 Tow depth 6 (m) Tow angle ____ (vertical or specify angle) ____ Net size ____

Each tow preserved separately. ✓ Comments: A & B FORMALIN + SUCROSE

Benthic invertebrates: Site designation and/or location of Hester-Dendy samplers ____

Incubation time — Comments ____

Additional Information or Comments:

CROSSWIND LK
STATION 3 - 8M
8/6/85
HOLDER / BERNARD

Field Form — Limnology Section

Lake identification (note name, drainage, bay or fjord receiving draingage) _____

FOUND LK COPPER RIVER BASIN Sample station designation and depth Station 2 31 (m). Weather & lake surface conditions _____

Sunny calm no WIND or waves

Date 8/6/85 Name(s) of sampling personnel HOLDER / BERNARD

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C) OURS	Temperature (°C) PHARMACOLOGY YSI	Dissolved Oxygen (mg/l) OURS	Dissolved Oxygen (mg/l) PHARMACOLOGY YSI	% Oxygen Saturation	Solar Illuminence (67) (Foot Candles) Up	Solar Illuminence (67) (Foot Candles) Down	% Incident Light Level (3) Up	% Incident Light Level (3) Down
Incidence			8.1	8.1		6,700	720		
Surface	15.6	15.8	8.1	8.1		3,900	35		
0.5	15.0		8.2			1,600	38		
1.0	14.8	15.0	8.3	8.8		1,400	16		
1.5	14.5		8.3			1,100	22		
2.0	14.3	14.8	8.3	8.5		820	15		
2.5	14.2		8.2			570	10		
3.0	14.2	14.5	8.1	8.0		410	6.5		
3.5	14.0		8.0			290	8.0		
4.0	13.9	14.3	7.9	7.6		170	6.8		
4.5	13.7		7.8			150	3.3		
5.0	13.5	14.0	7.6	7.1		110	3.0		
6.0	13.2	13.7	7.6	6.8		72	1.6		
7.0	13.0	13.6	7.3	6.4		35	0.58		
8.0	12.0	←	7.1	→					
9.0	11.5	←	6.7						
10.0	10.6		6.5						
11.0	9.5		6.2						
12.0	9.0		6.0						
13.0	8.2		5.8						
14.0	7.8		5.1						
15.0	7.5		4.7						
16.0	6.8		4.6						
17.0	6.5		4.3						
18.0	6.6		4.2						
19.0	6.0		4.0						
20.0	6.0		3.9						
21.0	5.5		3.5						
22.0	5.2		3.1						
23.0	5.2		3.1						

Comments: HACH 1.4 x 5.81 = 8.1
1.4 x 5.81 = 8.1
∴ 8.1

OUR O₂ PROBE HAS RUST ON IT
BORROWED A METER & PROBE FROM PHARMACOLOGY TO CK OURS AGAINST YSI

(over)

Water samples collected for lab analyses ✓ Depths samples were taken 1 (m) and 22(m) Samples filtered in (lab) Glenmallen or field _____

Comments _____

Secchi disc: Depth(s) disc diappeared/reappeared 5.5 15.5 (m) Mean disc readi..g 5.5 (m)

BIOLOGICAL PARAMETERS:

Phytoplankton: ^{14}C conducted _____ Dosimetry badges worn (initial of sampling personnel) _____.

Vial Number	Depth (m)	Bottle	Time Set	Time Pulled
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		

^{14}C samples filtered in lab _____ or field _____.

Periphyton: Site designation and/or location of colonization plates _____

Incubation time _____ (3 wk) _____ (6 wk). Was one plate contents preserved _____. Was other plate filtered for Chl a _____ in lab _____ or field _____. Comments _____

Zooplankton: Number of tows taken 2 A&B Tow depth 29 (m) Tow angle _____ (vertical) or specify angle) _____ Net size .5 x 153u

Each tow preserved separately. ✓ Comments: Formalin + Sucrose

Benthic invertebrates: Site designation and/or location of Hester-Dendy samplers

Incubation time _____ Comments _____

Additional Information or Comments:

CROSSWIND CK
STATION 2 31 M
HOLDER / BERNARD
8/6/85

Field Form

Limnology Section

Lake identification (note name, drainage, bay or fjord receiving draingage) _____

PINGUNDLK Copper River Basin Sample station designation

and depth Station 1 22 (m). Weather & lake surface conditions _____

clear sunny calm small ripples for waves

Date 8/6/95 Name(s) of sampling personnel HOLDER / BERNARD

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	PATHOLOGY Y/N	Dissolved Oxygen (mg/l)	PATHOLOGY Y/N	% Oxygen Saturation (60)	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Level Up	Down
Incidence						6000	720		
Surface	15.9	15.0	8.7	8.7		2,600	58		
0.5	15.8		8.6			1,300	43		
1.0	15.8	15.0	8.4	8.6		1,100	16		
1.5	14.6		8.3			700	33		
2.0	14.5	14.5	8.0	8.6		500	21		
2.5	14.5		7.9			390	7.6		
3.0	14.5	14.8	7.5	8.5		290	6.5		
3.5	14.3		7.4			210	5.5		
4.0	14.3	14.8	7.1	7.8		150	3.6		
4.5	14.2		7.0			110	2.7		
5.0	13.2	14.6	6.6	7.3		90	1.4		
6.0	12.3	14.0	6.3	6.9		45	1.6		
7.0	12.1	12.7	6.0	6.7					
8.0	11.0		5.6						
9.0	10.8		5.2						
10.0	10.2		5.0						
11.0	9.9		4.6						
12.0	9.1		4.3						
13.0	8.9		4.1						
14.0	8.0		3.9						
15.0	7.3		3.6						
16.0	6.8		3.5						
17.0	6.2		3.2						
18.0	6.0		3.1						
19.0	6.0		3.0						
20.0	6.0		2.9						
[illegible]	6.0		2.7						
[illegible]	6.0		2.6						

Comments: HACH RO 1.5 x 5.81 = 8.7

1.5 x 5.81 = 8.7

x̄ 8.7

(over)

7 (m) and 15 (m) samples filtered in lab Bennellen or field _____

Comments _____

Secchi disc: Depth(s) disc diappeared/reappeared 4.5 / 4.5 (m) Mean disc readi..g 4.5 m

BIOLOGICAL PARAMETERS:

Phytoplankton: ^{14}C conducted _____ Dosimetry badges worn (initial of sampling personnel) _____.

Vial Number	Depth (m)	Bottle	Time Set	Time Pulled
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		

^{14}C samples filtered in lab _____ or field _____.

Periphyton: Site designation and/or location of colonization plates _____

Incubation time _____ (3 wk) _____ (6 wk). Was one plate contents preser[illegible] _____. Was other plate filtered for Chl a _____ in lab _____ or field _____. Comments _____

Zooplankton: Number of tows taken 2 Tow depth 20 (m) Tow angle (vertical) or specify angle) _____ Net size .5 x 153 u

Each tow preserved separately. ✓ Comments: Formalin + Sucrose

Benthic invertebrates: Site designation and/or location of Hester-Dendy samplers

Incubation time _____ Comments _____

Additional Information or Comments:

Crossmind LK

BIC 185 STATION 1 22M

HOLDER / BERNARD

Alaska Department of Fish & Game - Limnology
Sample Inventory

Lake CROSSWIND Date Sampled 3/6/86 Sampling Personnel HOLDER/Martinuk Date Received in Lab

Station	Depth (m)	Water Samples: Nutrients (500 ml Filt/Frozen)	Water Samples: pH, Cond. (500 ml Unfilt/Refrig)	Water Samples: Total P Total N (125 mls Unfilt/Frozen)	Particulate: N (1 l)	Particulate: P (1 l)	Particulate: C (1 l)	Particulate: Chl a (2 l)	Metals (125 mls Unfiltered)	^{14}C (# Vials)	Zooplankton (# Samples)	Benthic Invertebrates (# Samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
1	1	✓	✓	✓	✓	✓	✓	✓						✓
	10	✓	✓	✓	✓	✓	✓				2 A&B			
	12													

Ice from mid depth
Snow sample near station 1
No forest floor shade sample

50% Ethanol

Field Form — Limnology Section

Lake identification (note name, drainage, bay or fjord receiving draingage) CROSSWIND LK COPPER RIVER Sample station designation and depth STATION 1 13.5 (m). Weather & lake surface conditions Partly cloudy -20°F WIND 5mph from North

Date 3/6/86 Name(s) of sampling personnel HOLDER / Martinek

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Level Up	Down
Incidence				7200	1800		
Surface	-.8	11.		1400	200		
0.5	-.8	11		280	150		
1.0	-.5	11.2		140	10		
1.5				100	1.2		
2.0	+.2	11.2		60	.5		
2.5				30	.4		
3.0	+1	11.3		15	.2		
3.5							
4.0	1.2	10.8					
4.5							
5.0	1.2	10.8					
6.0	1.7	10.5					
7.0	1.8	10.5					
8.0	1.8	10.6					
9.0	1.9	10.6					
10.0	1.9	10.4					
11.0	2.0	10.4					
12.0	2.0	10.2					
13.0	2.2	3.8					
14.0							
15.0							
16.0							
17.0							
18.0							
19.0							
20.0							

Comments: HACH $\frac{1.9}{1.9} \times 5.81 = 11$, $= 11$, $\bar{x} = 11$

Ice 80 cm

Snow 30 cm WIND driven & hard packed

(over)

1 (m) and 10 (m) amples filtered in lab Glenn Allen or field

Comments

Secchi disc: Depth(s) disc diappeared/reappeared 4 13 (m) Mean disc readi..g 3.5 m

BIOLOGICAL PARAMETERS:

Phytoplankton: ^{14}C conducted Dosimetry badges worn (initial of sampling personnel)

Vial Number	Depth (m)	Bottle	Time Set	Time Pulled
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		
		Light		
		Light		
		Dark		
		Kill		

^{14}C samples filtered in lab or field .

Periphyton: Site designation and/or location of colonization plates

Incubation time (3 wk) (6 wk). Was one plate contents preserved

. Was other plate filtered for Chl a in lab or field

. Comments

Zooplankton: Number of tows taken 2 Tow depth 12 (m) Tow angle

(vertical or specify angle) Net size

Each tow preserved separately. ✓ Comments: 50% ethanol

Benthic invertebrates: Site designation and/or location of Hester-Dendy samplers

Incubation time Comments

Additional Information or Comments:

Cross WIND

3/6/86

Station 1

HOLDER / Martinek

Alaska Department of Fish & Game - Limnology
Sample Inventory

Copper River Drainage

Lake CROSSWIND CK Date Sampled 7/12/89 Sampling Personnel MARTINEK, STRAUMFJORD Date Received in Lab

Station	Depth (m)	Water Samples: Nutrients (500 ml Filt/Frozen)	Water Samples: pH, Cond. (500 ml Unfilt/Refrig)	Water Samples: Total P Total N (125 mls Unfilt/Frozen)	Particulate: N (1 l)	Particulate: P (1 l)	Particulate: C (1 l)	Particulate: Chl a (2 l)	Metals (125 mls Unfiltered)	14C (# Vials)	Zooplankton (# Samples)	Benthic Invertebrates (# Samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
1	1	✓	✓	✓	✓	✓	✓	✓						
	15	✓	✓	✓	✓	✓	✓	✓			2			
	20													
2	1	✓	✓	✓	✓	✓	✓	✓						
	6	✓	✓	✓	✓	✓	✓	✓			2			
	7													
3	1	✓	✓	✓	✓	✓	✓	✓						
	22	✓	✓	✓	✓	✓	✓	✓			2			
	32													

Field Form — Limnology Section

ke identification (note name, drainage, bay or fjord receiving drainage) _____

Crosswind Lk - Copper River Drainage Sample station designatic

d depth Station # 1 22 m (m). Weather & lake surface conditions _____

Calm, Sunny, Clear, Hot

te 7/12/84 Name(s) of sampling personnel MARTINEK, STAHMILLER

YSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Leve Up	Do
ncidence				4500	1300		
urface	20.3	9.9		2100	250		
0.5	20.2	9.9		1500	17		
1.0	20	9.9		1300	16		
1.5	19.6	9.9		750	13		
2.0	19.6	9.9		500	10		
2.5	19.5	10.0		450	8.4		
3.0	19.6	10.0		330	6		
3.5	19.5	10.0		270	4.5		
4.0	19.3	10.0		240	4.1		
4.5	16.7	10.6		150	3.1		
5.0	15.6	10.8		140	2.2		
6.0	13.8	10.9		77	1.3		
7.0	12.6	11.0		42	.73		
8.0	11.1	10.9					
9.0	10.1	10.9					
10.0	9.9	10.8					
11.0	9.8	10.8					
12.0	9.4	10.8					
13.0	9.3	10.8					
14.0	9.0	10.7					
15.0	8.8	10.7					
16.0	8.5	10.7					
17.0	8.4	10.7					
18.0	8.3	10.7					
19.0	8.3	10.7					
20.0	8.2	10.6					
21.0	8.1	10.6					

Water samples collected for analyses ✓ Depths 1 (m) 15 (m)
samples filtered in lab ✓ or field _____

Secchi disc: Depth(s) disc disappeared/reappeared 6.5 / 6.0 (m) x 625

Zooplankton: Number of tows: 2 Tow depth 20 m Tow angle Vertical
Net size .5 m 153 µ Preserved separtely ✓
Preservative 10% Buffered FORMALIN

Comments: Hach D.O.

1.7 x 5.81 = 9.9
1.7 x 5.81 = 9.9
9.9

ake identification (note name, drainage, bay or fjord receiving drainage) _____

Crosswind Lk - Copper River Drainage Sample station designation

nd depth Station # 2 33 (m). Weather & lake surface conditions

Calm, Clear, Sunny & Hot

ate 7/12/89 Name(s) of sampling personnel Martinek, Sladmiller

YSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Level Up	Down
Incidence				5300	1100		
Surface	20.3	9.9		2700	300		
0.5	20.3	10.0		2000	200		
1.0	20.0	9.9		1300	160		
1.5	19.9	10.0		1000	130		
2.0	19.5	10.0		710	100		
2.5	19.4	10.1		650	10		
3.0	19.3	10.1		470	8.0		
3.5	18.9	10.2		350	5.2		
4.0	18.3	10.2		260	3.7		
4.5	17.3	10.4		210	3.3		
5.0	15.2	10.6		160	2.6		
6.0	13.7	11.1		100	1.9		
7.0	11.6	11.1		56	1.2		
8.0	10.8	11.1		35	.58		
9.0	10.2	11.2					
10.0	9.9	11.0					
11.0	9.6	11.0					
22.0	9.5	11.1					
13.0	9.2	11.0					
14.0	9.0	11.0					
15.0	9.0	11.1					
16.0	8.9	11.1					
17.0	8.8	11.1					
18.0	8.5	11.0					
19.0	8.5	11.1					
20.0	8.3	11.0					
24.0	8.0	11.0					
28.0	7.9	10.7					
30.0	7.9	10.8					
32.0	7.9	10.7					

Water samples collected for analyses ✓ Depths 1 (m) 22 (m)
samples filtered in lab ✓ or field _____

Secchi disc: Depth(s) disc disappeared/reappeared 7.5 / 7.5 (m) x 7.5

Zooplankton: Number of tows: 2 Tow depth 32 m Tow angle vertical
Net size .5m 153 µ Preserved separately ✓
Preservative 100 % Buffered formalin

Comments:

DETAILED LAKE SURVEY
Field Form

F.R.E.D. Division
Limnology Section

ake identification (note name, drainage, bay or fjord receiving drainage) Crosswind Lk - Copper River Drainage Sample station designatio

d depth Station # 3 9 (m). Weather & lake surface conditions Calm, Clear, Sunny & Hot

te 7/12/89 Name(s) of sampling personnel Martinek, Stadmiller

YSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Leve Up	Do
Incidence				5400	1000		
Surface	20.1	9.9		2200	300		
0.5	20.1	9.6		2000	300		
1.0	19.0	9.7		1300	200		
1.5	18.9	9.9		1000	200		
2.0	19.0	9.9		1000	200		
2.5	19.0	9.9		550	200		
3.0	18.4	9.8		450	200		
3.5	16.6	10.2		370	100		
4.0	11.2	10.2		270	50		
4.5	15.5	10.2		210	50		
5.0	13.5	10.1		160	3.2		
6.0	12.1	10.4		100	2.1		
7.0	10.9	10.4		53	1.5		
8.0	10.5	10.4					
9.0							
10.0							
11.0							
22.0							
13.0							
14.0							
15.0							
16.0							
17.0							
18.0							
19.0							
20.0							

Water samples collected for analyses ✓ Depths 1 (m) 6 (m)
samples filtered in lab ✓ or field

Secchi disc: Depth(s) disc disappeared/reappeared 5.5 / 5.0 (m) x 5.25

Zooplankton: Number of tows: 2 Tow depth 7 m Tow angle Vertical
Net size .5 m 153 μ Preserved separately ✓
Preservative 100 a Buffered formalin

Comments:

Alaska Department of Fish & Game - Limnology
Sample Inventory

Lake CROSSWIND LK. Date Sampled 5/2/90 Sampling Personnel PATRICK, STADTMILLER Date Received in Lab

Station	Depth (m)	Water Samples: Nutrients (500 ml Filt/Frozen)	Water Samples: pH, Cond. (500 ml Unfilt/Refrig)	Water Samples: Total P Total N (125 ml Unfilt/Frozen)	Particulate: N (1 l)	Particulate: P (1 l)	Particulate: C (1 l)	Particulate: Chl a (8 l)	Metals (125 ml Unfiltered)	14C (# Vials)	Zooplankton (# Samples)	Benthic Invertebrates (# Samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
1	1	✓	✓	✓	✓	✓	✓	✓						
	17	✓	✓	✓	✓	✓	✓	✓			2			
	15.5													
2	1	✓	✓	✓	✓	✓	✓	✓						
	22	✓	✓	✓	✓	✓	✓	✓			2			
	20													
3	1	✓	✓	✓	✓	✓	✓	✓						
	3	✓	✓	✓	✓	✓	✓	✓			2			
	5													

* Sample: hold overnight in refrigerator prior to processing

F.R.E.D. Division
Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) Crossguard Lake - Copper River Drainage

Sample station designation and depth Sta. I 17 (m). Weather & lake surface conditions Overcast, wind blowing out of the southeast @ 15-20 mph, Time 1600 [illegible] SUN

Date 5/2/90 Name(s) of sampling personnel MARTINEK, STRATMILLER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Level Up	Down
Incidence							
Surface	[illegible]	10.4		2300	600		
0.5	1.0	10.2		1200	140		
1.0	1.2	10.3		690	62		
1.5	1.5	10.6		410	22		
2.0	1.5	10.8		240	14		
2.5	1.6	11.0		100	8.5		
3.0	1.6	11.0		150	5.4		
3.5	1.6	11.2		110	4.0		
4.0	1.7	11.2		94	2.7		
4.5	1.7	11.2		75	2.1		
5.0	1.7	11.3		60	1.6		
6.0	1.7	11.3		46	1.4		
7.0	1.8	11.4		38	.87		
8.0	1.8	11.1		22	.46		
9.0	1.7	11.1					
10.0	1.7	11.1					
11.0	1.7	11.2					
12.0	1.7	11.2					
13.0	1.8	11.2					
14.0	1.8	10.9					
15.0	1.8	11.0					
16.0	1.8	7.8					
17.0							
18.0							
19.0							
20.0							

Water samples collected for analyses ✓ Depths 1 (m) 10 (m)
samples filtered in lab Glennallen or field

Secchi disc: Depth(s) disc disappeared/reappeared 6.5 / 6.0 (m) x 6.25

Zooplankton: Number of tows: 2 Tow depth 15.5m Tow angle vertical
Net size 0.2 dia. 153 μ Preserved separately yes 1A & 1B
Preservative 10% acidified formalin

Comments:

Very snow on lake
Ice depth 30"
Air temp 46°F

Mach 4.0 1.8 x 5.81 = 10.45
1.8 x 5.81

F.R.E.D. Division
Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) CrossWind Lake - Coppen River Drainage

and depth Stn. II 32 (m). Sample station designation

Weather & lake surface conditions overcast, wind blowing out of southeast @ 15-20 mph, Time 1450

Date 5/2/90 Name(s) of sampling personnel MARTINEK, STAUDINGER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Level Up	Down
Interface							
Surface	0.8	10.4		1800	380		
0.5	1.0	10.4		770	110		
1.0	1.2	10.5		490	74		
1.5	1.3	10.6		360	20		
2.0	1.3	10.7		270	14		
2.5	1.4	10.8		220	9.2		
3.0	1.4	10.9		170	6.1		
3.5	1.5	11.0		150	4.0		
4.0	1.4	11.0		120	3.1		
4.5	1.4	11.0		98	2.3		
5.0	1.5	11.0		80	1.5		
6.0	1.5	11.2		60	1.5		
7.0	1.5	11.2		41	166		
8.0	1.5	11.2		27	139		
9.0	1.5	11.3		19	125		
10.0	1.5	11.2		13	115		
11.0	1.5	11.3					
12.0	1.5	11.2					
13.0	1.5	11.2					
14.0	1.5	11.2					
15.0	1.5	11.2					
16.0	1.5	11.2					
17.0	1.6	10.8					
18.0	1.8	10.7					
19.0	1.8	10.4					
20.0	1.8	10.2					
25.0	2.2	8.8					
30.0	3.0	5.4					

Water samples collected for analyses ✓ Depths 1 (m) 22 (m)
samples filtered in lab GRANVILLE or field

Secchi disc: Depth(s) disc disappeared/reappeared 7 / 6 (m) x 6.5

Zooplankton: Number of tows: 2 Tow depth 30 m Tow angle vertical
Net size 0.2 mid 153 µ Preserved separately yes 4 or 5
Preservative 10% Formalin + Rose Bengal

Comments:

WS SAMP
25 Tow depth

DETAILED LAKE SURVEY

Field Form

F.R.E.D. Division
Limnology Section

Lake identification (note name, drainage, bay or fjord receiving drainage) CROSSWIND Lake - Coppen River Drainage

and depth STA III 7' (m). Sample station designation

Weather & lake surface conditions OVERCAST, WIND blowing out of the Southeast 15-20 mph, Time 1330

Date 5/2/90 Name(s) of sampling personnel MARTINEK STANTON

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Level Up	Down
Incidence							
Surface	1.0	10.4		1200	420		
0.5	1.0	10.2		860	150		
1.0	1.0	10.4		520	79		
1.5	1.0	10.4		370	21		
2.0	1.5	10.5		200	10		
2.5	1.5	10.5		210	5.5		
3.0	1.3	10.6		160	4.8		
3.5	1.2	10.8		140	3.8		
4.0	1.2	10.8		38	1.2		
4.5	1.2	10.8		14	1.24		
5.0	1.3	10.8					
6.0	1.5	10.6					
6.5	1.8	7.4					
8.0							
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							
16.0							
17.0							
18.0							
19.0							
20.0							

Water samples collected for analyses ✓ Depths 1 (m) 3 (m)
samples filtered in lab Glenridden or field

Secchi disc: Depth(s) disc disappeared/reappeared 5.5 / 5.0 (m) x 5.25

Zooplankton: Number of tows: 2 Tow depth 5m Tow angle vertical
Net size 0.2 mic 153 u Preserved separately yes A-3
Preservative 10% Neutralized formalin

Comments:

30" Ice Drill
No SNOW

Alaska Department of Fish & Game - Limnology
Sample Inventory

Lake CROSSWIND LK Date Sampled 9/7/90 Sampling Personnel Strohmaier, Robinson Date Received in Lab

Station	Depth (m)	Water Samples: Nutrients (500 ml Filt/Frozen)	pH, Cond. (500 ml Unfilt/Refrig)	Total P Total N (125 mls Unfilt/Frozen)	Particulate: N (1 l)	P (1 l)	C (1 l)	Chl a (2 l)	Metals (125 mls Unfiltered)	^{14}C (# Vials)	Zooplankton (# Samples)	Benthic Invertebrates (# Samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
1	1	✓	✓	✓	✓	✓	✓	✓						
	10	✓	✓	✓	✓	✓	✓	✓						
	14										14 J B			
2	1	✓	✓	✓	✓	✓	✓	✓						
	16	✓	✓	✓	✓	✓	✓	✓						
	20										24 J 2 B			
3	1	✓	✓	✓	✓	✓	✓	✓						
	8	✓	✓	✓	✓	✓	✓	✓						
	12										31 J 3 B		✓	

(lake name, drainage, bay or fjord receiving drainage) CROSSWIND LK COFFEE RIVER DRAINAGE

and depth STATION #2 22.5 (m). Weather & lake surface conditions CLEAR & SUNNY SLIGHT BREEZE SOUTH EAST AIR TEMP. 10.1°C

Date 9-7-90 Name(s) of sampling personnel ROBERSON & STADTMILLER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Level Up	Down
Surface	10.1	9.8		3600	1500		
1.0	10	9.7		1700	18		
2.0	10	9.7		1400	19		
3.0	10	9.7		900	16		
4.0	10	9.8		700	20		
5.0	10	9.9		400	12		
6.0	10	9.7		350	14		
7.0	10	9.6		290	2		
8.0	10	9.5		220	4.2		
9.0	10	9.5		170	2.5		
10.0	10	9.5		140	2.2		
11.0	10	9.3		110	1.9		
12.0	10	9.2		70	1.5		
13.0	10	9.1		42	1.1		
14.0	10	9.1		25	.4		
15.0	10	8.9					
16.0	10	8.9					
17.0	10	8.9					
18.0	10	8.9					
19.0	10	8.7					
20.0	10	8.8					
21.0	10	8.8					
22.0	10	8.8					
23.0	10	8.7					
24.0	10	8.7					
21	9.9	8.6					
22	9.2	8.3					
23	8.9	8.4					
	8.8	8.0					

Water samples collected for analyses ✓ Depths 1 (m) 16 (m)
samples filtered in lab GLENNALLEN or field

Secchi disc: Depth(s) disc disappeared/reappeared 7.5 16.5 (m) x 7.0

Zooplankton: Number of tows: 2 Tow depth 20 Tow angle VERTICLE
Net size .5 153µ Preserved separately yes
Preservative FORMALIN - RAIN 7

Comments:

Field Form — Limnology Section

Lake identification (note name, drainage, bay or fjord receiving drainage) CROSSWIND LK COPPER RIVER DRAINAGE

and depth STATION # 3 12 (m). Sample station designation

Weather & lake surface conditions CLEAR & SUNNY/ SLIGHT BREEZE FROM SOUTH EAST AIR TEMP 10.1°C

Date 9-7-90 Name(s) of sampling personnel ROBERSON, STADTMILLER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Level Up	Down
Reference							
Surface	10	10.2		4500	1400		
1.0	10	10.1		2000	300		
2.0	10	9.9		1500	80		
3.0	10	10		1000	35		
4.0	10	10		600	15		
5.0	9.9	10.1		400	17		
6.0	9.9	9.9		300	20		
7.0	9.9	9.9		250	10		
8.0	9.9	9.9		200	2.5		
9.0	9.9	9.9		200	5		
10.0	10	9.8		150	7		
11.0	9.9	9.8		100	3.5		
12.0	9.9	9.8		100	3.2		
13.0	9.9	9.9		75	3.2		
14.0	9.9	9.9		60	2		
15.0	9.9	9.9		46	2		
16.0	9.8	9.7		37	1		
17.0	9.8	9.7					
18.0							
19.0							
20.0							
21.0							
22.0							
23.0							
24.0							
25.0							

Water samples collected for analyses ✓ Depths 1 (m) 12 (m)
samples filtered in lab _____ or field GLENNALLEN

Secchi disc: Depth(s) disc disappeared/reappeared 6.5 / 5.5 (m) x 6.0

Zooplankton: Number of tows: 1 Tow depth 12 Tow angle VERTICAL
Net size .5 Preserved separately YES
Preservative 10% BUFFERED FORMALIN

Comments:

Field Form

Limnology Section

Lake identification (note name, drainage, bay or fjord receiving drainage) COPPER RIVER DRAINAGE CP-SOUND L

and depth STATION # 1 15 (m). Sample station designation

SLIGHT BREEZE FROM SOUTH-EAST. AIR TEMP 12.1°C Weather & lake surface conditions CLEAR & SUNNY

Date 9-7-90 Name(s) of sampling personnel ROBERSON & STADTMILLER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) To	Solar Illuminence (Foot Candles) Down	% Incident Light Level To	% Incident Light Level Down
Surface							
	10	9.2		3100	1400		
	10	9.0		1500	70		
	10	9.0		1000	18		
	10	9.2		700	16		
	10	9.3		500	13		
	10	9.4		350	6		
	10	9.3		250	10		
	10	9.2		230	2.5		
	10	9.1		150	4		
	10	7.9		120	2.3		
	10	8.3		100	1.8		
	10	8.6		80	2.2		
	10	8.5		46	1		
	10	8.5		30	.8		
	10	8.4					
	10	8.3					
	10	8.1					
	10	8.0					
	9.5	7.9					
	9.4	7.5					

Water samples collected for analyses ✓ Depths 1 (m) 10 (m)

samples filtered in lab _____ or field GLENNALLEN

Secchi disc: Depth(s) disc disappeared/reappeared 6 / 5.5 (m) x 6.75

Zooplankton: Number of tows: 2 Tow depth 14 Tow angle VERTICLE

Net size .5 Preserved separately YES

Preservative FORMALIN 10% BUFFERED

Comments:

Oil sheen on water

Alaska Department of Fish & Game - Limnology

Sample Inventory

Lake CROSSWIND Date sampled 1/26/91 Sampling Personnel MCINTINE K, STADSTAD ILKA Date Received in lab _____

		Water Samples												
				Total P	Particulate				Metals				Benthic	
Station	Depth (m)	Nutrients (500 ml Filt/Frozen)	pH Cond. (500 ml Unfilt/Refrig)	total N (125 mls) Unfilt/Frozen)	N (1 l)	P (1 l)	C (1 l)	Chl a (1 l)	(125 mls) Unfiltered)	14C (# Vials)	Zooplankton (# Samples)	Invertebrates (# samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
1	1	✓	✓	✓	✓	✓	✓	✓						
	10	✓	✓	✓	✓	✓	✓	✓						
	13										1A+1B			
				/										
2	1	✓	✓	✓	✓	✓	✓	✓						
	12.5	✓	✓	✓	✓	✓	✓	✓						
	17								+		2A+2B			
3	1	✓	✓	✓	✓	✓	✓	✓						
	4.5	✓	✓	✓	✓	✓	✓	✓						
	5	✓	✓	✓	✓	✓	✓	✓			3A+3B			

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) CROSSWIND LAKE - COPPER RIVER DRAINAGE Sample station designation and depth STATION I 14.5 (m). Weather & lake surface conditions CLOUDY - WIND OUT OF THE SOUTHEAST 5-8 40°F AIR TEMP

Date 4/26/91 Name(s) of sampling personnel MALTINER, STARTMILLER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incidence Light Level Up	Down
Incidence				1100	790		
Surface	0°	10.7		810	170		
0.5	0°	10.6		290	100		
1.0	0°	10.6		110	30		
1.5	1	10.0		60	11		
2.0	1	10.0		34	6.9		
2.5	1.2	9.8		24	.57		
3.0	1.5	9.8		16	.42		
3.5	1.8	9.6		10	.33		
4.0	2.0	9.6					
4.5	2.0	9.4					
5.0	2.0	9.4					
5.5	2.1	9.3					
6.0	2.2	9.2					
7.0	2.2	9.2					
8.0	2.5	9.1					
9.0	2.7	9.0					
10.0	2.8	8.9					
11.0	2.9	9.0					
12.0	3.0	9.0					
13.0	3.5	5.0					
14.0							
15.0							
16.0							
17.0							
18.0							
19.0							

Water samples collected for analyses ✓ Depths 1 (m) 10 (m)
samples filtered in lab GLOVERVILLE or field

Secchi disc: Depth(s) disc disappeared/reappeared 4.5 / 4.0 (m) x 4.25

Zooplankton: Number of tows: 2 Tow depth 13 m Tow angle VERTICAL
Net size 0.2 DIA 153 µ Preserved separately YES 1A & 1B
Preservative 10% BUFFERED FORMALIN

Comments:

ICE DEPTH 36" HOLE I.D. 5.21 x 1.8 } 10.93
SNOW DEPTH 4" 5.81 x 1.9 } 11.03
10.7

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) Crossing Lake - Copper River Drainage Sample station designation and depth Station II 18.5 (m). Weather & lake surface conditions Cloudy - Calm

Date 4/24/91 Name(s) of sampling personnel Martinek, Stratmilter

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incidence Light Level Up	Down
Incidence				2400	1000		
Surface	0	10.7		1400	300		
0.5	0	10.4		600	50		
1.0	0	10.4		350	18		
1.5	0.5	10.4		200	4.9		
2.0	0.7	10.2		130	2.6		
2.5	1.0	10.2		100	1.6		
3.0	1.2	10.0		60	.89		
3.5	1.7	10.0		39	.51		
4.0	1.8	9.9		.31	.37		
4.5	2.0	9.9		.23	.25		
5.0	2.0	9.8					
5.5	2.0	9.8					
6.0	2.1	9.8					
7.0	2.2	9.9					
8.0	2.5	9.8					
9.0	2.6	9.6					
10.0	2.7	9.5					
11.0	2.9	9.4					
12.0	2.9	9.5					
13.0	3.0	9.5					
14.0	3.0	9.5					
15.0	3.0	9.4					
16.0	3.0	9.2					
17.0	3.0	9.2					
18.0							
19.0							

Water samples collected for analyses ✓ Depths 1 (m) 12.5 (m)
samples filtered in lab Glen Allen or field

Secchi disc: Depth(s) disc disappeared/reappeared 6.5 / 5.5 (m) x 6.0

Zooplankton: Number of tows: 2 Tow depth 17 Tow angle Vertical
Net size 0.2 mm 153 µ Preserved separately yes 2 A 0 2 B
Preservative 10% buffered formalin

Comments: 30" Ice Depth

DETAILED LAKE SURVEY

F.R.E.D. Division
Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) Crossguard Lake - Copper River Drainage Sample station designation and depth Station III 6.5 (m). Weather & lake surface conditions Cloudy - calm

Date 4/24/91 Name(s) of sampling personnel Martinek, Stallings

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Solar Illuminence (Foot Candles) Down	% Incidence Light Level Up	% Incidence Light Level Down
Incidence				2500	1100		
Surface	0	10.7		1600	400		
0.5	0.5	10.4		670	70		
1.0	0.3	10.1		420	14		
1.5	0.7	10.2		270	6		
2.0	1.0	10.2		190	3.2		
2.5	1.0	10.0		140	2.9		
3.0	1.5	9.9		100	2.1		
3.5	1.8	9.7		81	1.7		
4.0	2.0	9.6		63	1.4		
4.5	2.0	9.2		37	.79		
5.0	2.1	9.2		22	.46		
5.5	2.1	9.2					
6.0	2.2	9.2					
7.0							
8.0							
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							
16.0							
17.0							
18.0							
19.0							

Water samples collected for analyses ✓ Depths 1 (m) 4.5 (m)
samples filtered in lab Glenwallen/ or field

Secchi disc: Depth(s) disc disappeared/reappeared 6.5 / 6.0 (m) x 6.25

Zooplankton: Number of tows: 2 Tow depth 5 Tow angle vertical
Net size 0.2 dia 153u Preserved separately yes 3 A & 3 B
Preservative 10% buffered formalin

Comments:

37" ice depth

Alaska Department of Fish & Game - Limnology

Sample Inventory

Lake CASWELL Date sampled 9/6/91 Sampling Personnel MARTINEK, STRATTON Date Received in lab _____

		Water Samples												
		Nutrients	pH Cond.	Total P total N	Particulate				Metals			Benthic		
Station	Depth (m)	(500 ml Filt/Frozen)	(500 ml Unfilt/Refrig)	(125 mls) Unfilt/Frozen)	N (1 l)	P (1 l)	C (1 l)	Chl a (1 l)	(125 mls) Unfiltered)	DOC (# Vials)	Zooplankton (# Samples)	Invertebrates (# samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
1	1	✓	✓	✓	✓	✓	✓	✓						
	13	✓	✓	✓	✓	✓	✓	✓						
	18										2			
2	1	✓	✓	✓	✓	✓	✓	✓						
	22	✓	✓	✓	✓	✓	✓	✓						
	31										2			
3	1	✓	✓	✓	✓	✓	✓	✓						
	7	✓	✓	✓	✓	✓	✓	✓						
	8										2			

DETAILED LAKE SURVEY

F.R.E.D. Division
Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) CROSSWIND LK
CAMPBELL RIVER DRAINAGE Sample station designation
and depth #1 9m (m). Weather & lake surface conditions CLOUDY, SPARSE
PAIN WIND OUT OF SOUTH @ 10 MPH
Date 9-6-91 Name(s) of sampling personnel MARTINEX & STADTMILLER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incidence Light Level Up	Down
Incidence				1700	300		
Surface	5.9	9.9		550	8.5		
0.5	5.9	9.8		450	7.3		
1.0	5.9	9.8		270	6.5		
1.5	5.9	9.5		180	6.2		
2.0	5.9	9.5		240	8.3		
2.5	5.9	9.6		200	5.3		
3.0	5.9	9.6		170	4.6		
3.5	5.9	9.6		140	3.7		
4.0	5.9	9.6		130	3.3		
4.5	5.9	9.6		100	2.0		
5.0	5.8	9.5		66	1.6		
5.5	5.8	9.5		52	1.3		
6.0	5.8	9.5		49	1.1		
7.0	5.8	~~9.4~~		39	.81		
8.0	5.7	9.4		28	.59		
9.0	5.7	9.2		22	.43		
10.0	5.7	9.2		15	.33		
11.0	5.7	9.3					
12.0	5.7	9.3					
13.0	5.7	9.2					
14.0	5.7	9.2					
15.0	5.7	9.1					
16.0	5.6	9.1					
17.0	5.6	8.9					
18.0	5.6	8.9					
19.0							

Water samples collected for analyses ✓ Depths 1 (m) 13 (m)
samples filtered in lab GLENEAGLES or field

Secchi disc: Depth(s) disc disappeared/reappeared 5.5 / 5.0 (m) x 5.25

Zooplankton: Number of tows: 2 Tow depth 18 m Tow angle VERTICAL
Net size .5m 153 µ Preserved separately 1A & 1B
Preservative 10% NEUTRALIZED FORMALIN

Comments:

DETAILED LAKE SURVEY

F.R.E.D. Division
Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) CROSSWIND LK. COPPER RIVER DRAINAGE Sample station designation and depth STATION # 2 72m (m). Weather & lake surface conditions CLOUDY, SPARSE RAIN, WIND OUT of S @ 5-8 M.P.H.

Date 9-6-91 Name(s) of sampling personnel MARTINEK, STADTMILLER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incidence Light Level Up	Down
Incidence				750	280		
Surface	5.8	9.9		350	6.5		
0.5	5.8	9.9		300	5.3		
1.0	5.9	9.9		200	4.7		
1.5	5.8	9.9		170	4.5		
2.0	5.8	9.8		140	3.7		
2.5	5.8	9.8		130	3.0		
3.0	5.8	9.7		110	2.5		
3.5	5.5	9.8		94	2.0		
4.0	5.8	9.7		81	1.6		
4.5	5.7	9.7		66	1.3		
5.0	5.7	9.7					
5.5	5.7	9.7					
6.0	5.7	9.7					
7.0	5.7	9.7					
8.0	5.7	9.6					
9.0	5.7	9.6					
10.0	5.7	9.5					
11.0	5.7	9.5					
12.0	5.7	9.5					
13.0	5.6	9.5					
14.0	5.6	9.4					
15.0	5.6	9.5					
16.0	5.6	9.4					
17.0	5.6	9.4					
18.0	5.6	9.3					
19.0	5.6	9.3					
20.0	5.6	9.3					
21.0	5.5	9.3					
22.0	5.5	9.2					
23.0	5.4	9.1					

Water samples collected for analyses ✓ Depths / (m) 22 (m)
samples filtered in lab Chemistry Office or field

Secchi disc: Depth(s) disc disappeared/reappeared 7.5 / 7.0 (m) x 7.25

Zooplankton: Number of tows: 2 Tow depth 31 m Tow angle Vertical
Net size 15 153 u Preserved separately yes 2 & 2 S
Preservative 10% neutralized formalin

Comments:

DETAILED LAKE SURVEY

F.R.E.D. Division
Limnology Section

Field Form

ke identification (note name, drainage, bay or fjord receiving drainage) Crosswind LV, Sample station designation
Copper River Drainage
d depth Station 3 9m (m). Weather & lake surface conditions
Cloudy sprinkle rain, wind 0 to 5 south @ 3 mph
te 9/6/21 Name(s) of sampling personnel Hightower, Stanmiller

YSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incidence Light Level Up	Down
Incidence				670	20		
Surface	5.7	9.9		303	5.2		
0.5	5.7	9.9		220	4.2		
1.0	5.7	9.8		170	3.6		
1.5	5.7	9.8		140	3.3		
2.0	5.7	9.8		120	2.9		
2.5	5.7	9.8		100	2.3		
3.0	5.7	9.8		87	2.0		
3.5	5.7	9.8		74	1.7		
4.0	5.7	9.8		62	1.4		
4.5	5.7	9.8					
5.0	5.7	9.8					
5.5							
6.0	5.7	9.8					
7.0							
8.0	5.6	9.7					
9.0	5.6	9.5					
10.0	5.5	9.4					
11.0							
12.0							
13.0							
14.0							
15.0							

Water samples collected for analyses ✓ Depths 1 (m) 7 (m)
samples filtered in lab Glennallen office or field

Secchi disc: Depth(s) disc disappeared/reappeared 5.0 / 4.5 (m) x 4.75

Zooplankton: Number of tows: 2 Tow depth 8m Tow angle vertical
Net size .5m 153µ Preserved separately yes 3A-3B
Preservative 10% formalin to 1N

Comments:

Hach DO
9.7
10.2

Alaska Department of Fish & Game - Limnology
Sample Inventory

Lake CROSKEWND Date sampled 7/17/91 Sampling Personnel MANTINCK STRATTMILLER Date Received in lab _____

		Water Samples												
					Particulate									
Station	Depth (m)	Nutrients (500 ml Filt/Frozen)	pH Cond. (500 ml Unfilt/Refrig)	Total P total N (125 mls) Unfilt/Frozen)	N (1 l)	P (1 l)	C (1 l)	Chl a (1 l)	Metals (125 mls) Unfiltered)	14C (# Vials)	Zooplankton (# Samples)	Benthic Invertebrates (# samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
1	1	✓	✓	✓	✓	✓	✓	✓						
	13	✓	✓	✓	✓	✓	✓	✓						
	18.5										1A + 1B			
2	1	✓	✓	✓	✓	✓	✓	✓						
	17	✓	✓	✓	✓	✓	✓	✓						
	21										2A + 2B			
3	1	✓	✓	✓	✓	✓	✓	✓						
	6	✓	✓	✓	✓	✓	✓	✓						
	7										3A + 3B			

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) _____

Sample station designation CRESSWELL LK - COPPER RIVER DRAINAGE

Sound depth STATION 1 20 (m). Weather & lake surface conditions CLOUDY

WIND OUT OF THE SOUTH @ 10-15 mph, SURFACE WAVES 1-1.5 m

Date 7/17/91 Name(s) of sampling personnel MARTINEK, STADMILLER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incidence Light Level Up	Down
Incidence				2700	800		
Surface	14	10.1		1400	23		
0.5	13.9	9.6		900	18		
1.0	13.9	9.6		580	14		
1.5	13.9	9.3		410	11		
2.0	13.9	9.3		330	8.5		
2.5	13.9	9.3		320	6.6		
3.0	13.9	9.4		190	6.0		
3.5	13.9	9.4		115	4.4		
4.0	13.9	9.4		110	2.6		
4.5	13.9	9.4		100	2.5		
5.0	13.9	9.4		78	2.0		
5.5	13.9	9.3		160	1.8		
6.0	13.9	9.3		100	1.4		
7.0	13.9	9.2		30	.76		
8.0	13.9	9.2		20	.47		
9.0	13.9	9.3					
10.0	13.8	9.3					
11.0	13.3	9.2					
12.0	12.6	9.2					
13.0	10.2	9.4					
14.0	8.5	9.4					
15.0	8.5	9.4					
16.0	8.5	9.4					
17.0	8.1	9.3					
18.0	7.3	9.3					
18.5	7.3	8.8					

Water samples collected for analyses ✓ Depths 1 (m) 13 (m)

samples filtered in lab _____ or field GLENNALLEN office

Secchi disc: Depth(s) disc disappeared/reappeared 5 / 4.5 (m) x 4.75

Zooplankton: Number of tows: 2 Tow depth 18.5m Tow angle vertical

Net size .5m 153 u Preserved separately yes

Preservative 10 % Neutralized formalin

Comments: _____

DETAILED LAKE SURVEY

F.R.E.D. Division
Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) Crosswind Lake - Copper River Drainage Sample station designation and depth STATION #2 28.5 (m). Weather & lake surface conditions Cloudy 15 mph WIND from the South - SURFACE WAVES 1-1.5 m

Date 7/17/11 Name(s) of sampling personnel MAHONEY, STROTMILLER

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incidence Light Level Up	Down
Incidence				7NO	600		
Surface	13.1	10.1		1500	23		
0.5	13.1	9.2		650	17		
1.0	13.1	9.2		1100	34		
1.5	13.1	9.1		1000	23		
2.0	13	9.1		260	12		
2.5	13	9.1		270	16		
3.0	13	9.1		650	12		
3.5	13	9.1		250	5.5		
4.0	13	9.1		130	3.5		
4.5	11.9	9.1		120	2.7		
5.0	11.8	9.2		83	2.2		
5.5	11.8	9.2		68	1.4		
6.0	11.7	9.1		54	1.2		
7.0	11.5	9.1		34	.74		
8.0	10.8	9.1		50	.71		
9.0	9.8	9.1		28	.49		
10.0	9.1	9.2		15	.45		
11.0	8.4	9.2		14	.31		
12.0	8.9	9.1		5.5	.16		
13.0	8.9	9.0		3.8	9		
14.0	8.6	9.0					
15.0	8.2	8.9					
16.0	8.0	8.9					
17.0	7.9	8.9					
18.0	7.8	8.8					
19.0	7.5	8.8					
20.0	7.4	8.7					
21.0	7.0	8.7					
22.0	7.0	8.5					
23.0	6.9	6.1					

Water samples collected for analyses ✓ Depths 1 (m) 17 (m)
samples filtered in lab _____ or field Glennallen office

Secchi disc: Depth(s) disc disappeared/reappeared 5.5 / 4.5 (m) x 5.0

Zooplankton: Number of tows: 2 Tow depth 21 m Tow angle vertical
Net size .5 153 u Preserved separately yes
Preservative 10 % neutralized formalin

Comments: _____

Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) Crossling Lk - Copper River Drainage Sample station designation
and depth Station #3 9 (m). Weather & lake surface conditions partly sunny
Wind out of the South 10 - 15 mph, 1.75m surface waves
Date 7/17/91 Name(s) of sampling personnel MARTINEK STADNICKY

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Solar Illuminence (Foot Candles) Down	% Incidence Light Level Up	% Incidence Light Level Down
Incidence				1400	400		
Surface	10.1	10.1		430	150		
0.5	10.1	9.9		450	76		
1	10.1	9.9		320	10		
1.5	10.1	9.8		320	7.5		
2.0	10.1	9.9		430	5.5		
2.5	10.1	9.8		210	4.6		
3.0	10.0	9.9		160	3.4		
3.5	10.0	9.4		130	3.3		
4.0	10.0	9.9		120	3.1		
4.5	10.0	9.8		220	5.5		
5.0	10.0	9.8		180	3.1		
5.5	10.0	9.8		130	3.1		
6.0	10.0	9.8		130	2.8		
6.5	10.0	9.8		73	2.2		
7.0	9.8	9.8		47	1.6		
7.5				24	1.4		
8.0							
8.5							
9.0							
9.5							
10.0							
10.5							
11.0							
11.5							
12.0							
12.5							
13.0							
13.5							
14.0							
14.5							
15.0							
15.5							
16.0							
16.5							
17.0							
17.5							
18.0							

Water samples collected for analyses ✓ Depths 1 (m) 6 (m)
samples filtered in lab _____ or field Glennallen office

Secchi disc: Depth(s) disc disappeared/reappeared 4.5 / 5.0 (m) x 4.75

Zooplankton: Number of tows: 2 Tow depth 7 m Tow angle vertical
Net size .5 m 153 u Preserved separately yes
Preservative 10 % neutralized formalin

Comments: _____

HACH DO 9.87 } 10.1L
10.45 }

Alaska Department of Fish & Game - Limnology

Sample Inventory

Lake CROSSWIND Date sampled 6/20/92 Sampling Personnel MARTINEK/STRATTON/ILL Date Received in lab _____

Station	Depth (m)	Water Samples: Nutrients (500 ml Filt/Frozen)	pH Cond. (500 ml Unfilt/Refrig)	Total P total N (125 mls) Unfilt/Frozen)	Particulate: N (1 l)	P (1 l)	C (1 l)	Chl a (1 l)	Metals (125 mls) Unfiltered)	14C (# Vials)	Zooplankton (# Samples)	Benthic Invertebrates (# samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
1	1	✓	✓	✓	✓	✓	✓	✓						
1	15	✓	✓	✓	✓	✓	✓	✓						
	20										1A & 1B			
2	1	✓	✓	✓	✓	✓	✓	✓						
2	21	✓	✓	✓	✓	✓	✓	✓						
	28.5										2A & 2B			
3	1	✓	✓	✓	✓	✓	✓	✓						
3	6	✓	✓	✓	✓	✓	✓	✓						
	7										3A & 3B			

Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) Crossing Lk
Copper River Drainage
Sample station designation and depth Station 1 21.5 m (m). Weather & lake surface conditions sunny & calm

Date 6/20/92 Name(s) of sampling personnel MAULTSBY, STAMMIS

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incidence Light Level Up	Down
Incidance				5400	1300		
Surface	11.1	10.0		2600	24		
0.5	11.0	11.6		1500	20		
1.0	10.8	12.9		1100	18		
1.5	10.1	10.6		800	17		
2.0	8.9	10.6		550	12		
2.5	8.5	11.6		450	8.1		
3.0	8.4	12.5		350	8.3		
3.5	8.3	11.0		257	6.0		
4.0	8.2	10.8		170	3.3		
4.5	8.2	10.4		140	2.6		
5.0	8.2	10.4		101	1.8		
5.5	8.2	10.6		80	1.5		
6.0	8.2	10.6		62	1.4		
7.0	8.1	10.4		37	.64		
8.0	8.1	10.4		22	.39		
9.0	8.0	10.4		14	.23		
10.0	7.4	10.2		7.3	.16		
11.0	6.8	10.2		4.7	.11		
12.0	6.2	10.2					
13.0	6.1	10.8					
14.0	5.8	10.2					
15.0	5.6	11.2					
16.0	5.5	10.4					
17.0	5.5	10.2					
18.0	5.5	9.9					
19.0	5.5	9.4					
20.0	5.3	9.8					

Water samples collected for analyses ✓ Depths 1 (m) 15 (m)
samples filtered in lab Glasswool, other or field

Secchi disc: Depth(s) disc disappeared/reappeared 5.0 / 4.5 (m) x 4.75

Zooplankton: Number of tows: 2 Tow depth 20. Tow angle vertical
Net size .5 153 u Preserved separately yes
Preservative 10% Neutralized formalin

Comments: Water samples refrigerated overnight prior to processing
HACH D.O. 10.0

Limnology Section

Field Form

ke identification (note name, drainage, bay or fjord receiving drainage) Crossing Lk
Copper River Drainage Sample station designation
d depth #2 31m (m). Weather & lake surface conditions sunny - calm

te 6/20/02 Name(s) of sampling personnel MAHINNEY, STROMMILLER

YSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incidence Light Level Up	Down
Incidence				950	410		
Surface	10.3	10.0		270	16		
0.5	7.8	10.0		200	15		
1.0	8.9	10.2		170	14		
1.5	8.8	10.2		190	15		
2.0	8.4	10.2		200	12		
2.5	8.3	10.2		450	11		
3.0	8.2	10.2		430	10		
3.5	8.1	10.2		320	5.6		
4.0	8.0	10.2		240	4.3		
4.5	8.0	10.1		210	3.9		
5.0	7.8	10.1		150	2.5		
5.5	7.7	10.2		120	2.5		
6.0	7.5	10.2		82	1.9		
7.0	7.4	10.2		53	1.3		
8	7.2	10.2		34	.65		
9.0	7.1	10.4		20	.42		
10.0	6.8	10.5		14	.26		
11.0	6.5	10.4		7.6	.15		
12.0	6.5	10.4		4.8	.17		
13.0	6.4	10.4					
14.0	6.2	10.4					
15.0	6.1	10.2					
16.0	6.0	10.2					
17.0	5.8	10.2					
18.0	5.5	10.0					
19.0	5.3	10.0					
22.0	5.2	9.6					
24.0	5.0	9.8					
26.0	4.9	9.6					
28.5	4.8	9.8					

Water samples collected for analyses 2 Depths 1 (m) 21 (m)
samples filtered in lab Glennallen office or field

Secchi disc: Depth(s) disc disappeared/reappeared 5.5 / 5.5 (m) x 5.5 m

Zooplankton: Number of tows: 2 Tow depth 28.5 Tow angle vertical
Net size .5 Preserved separately yes
Preservative 10% NEUTRALIZED FORMALIN

Comments: Water samples refrigerated overnight prior to processing

Field Form

ake identification (note name, drainage, bay or fjord receiving drainage) Crossing Lk
Copper River Drainage Sample station designation
d depth ~7 9.5 m (m). Weather & lake surface conditions sunny / calm

ate 6/20/97 Name(s) of sampling personnel MARTINAK, STROMILLO

HYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incidence Light Level Up	Down
Incidence				1300	460		
Surface	11	10.0		400	20		
0.5	11	10.2		280	20		
1.0	10.5	10.4		300	18		
1.5	10.0	10.6		700	17		
2.0	9.5	10.8		700	19		
2.5	9.3	11.0		650	12		
3.0	9.0	11.0		450	11		
[illegible]	9.0	11.0		350	8.2		
[illegible]	8.5	10.8		280	5.4		
[illegible]	8.3	10.6		200	4.4		
5.0	8.3	10.4		150	3.3		
5.5	8.0	10.2		130	2.7		
6.0	7.5	9.8		100	1.9		
7.0	7.0	9.6		52	1.8		
8.0	6.0	9.2		35	1.8		
9.0				21	.45		
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							
16.0							
17.0							
18.0							
19.0							

Water samples collected for analyses ✓ Depths 1 (m) 6 (m)
samples filtered in lab Glennallen office or field

Secchi disc: Depth(s) disc disappeared/reappeared 5.5 / 5.5 (m) x 5.5

Zooplankton: Number of tows: 2 Tow depth 7 m Tow angle Vertical
Net size .5 mm 153 µ Preserved separately yes 2 of 3
Preservative 10% Methalized formalin

Comments: Water Samples Refrigerated overnight prior to processing

Alaska Department of Fish & Game - Limnology

Sample Inventory

Lake CROOKED WIND Date sampled 7-7-92 Sampling Personnel STADTMILLER CATELEGE Date Received in Lab _____

		Water Samples												
		Nutrients	pH Cond.	Total P total N	Particulate				Metals					
Station	Depth (m)	(500 ml Filt/Frozen)	(500 ml Unfilt/Refrig)	(125 mls) Unfilt/Frozen)	N (1 l)	P (1 l)	C (1 l)	Chl a (1 l)	(125 mls) Unfiltered)	14C (# Vials)	Zooplankton (# Samples)	Benthic Invertebrates (# samples)	Periphyton (Chl a)	Phytoplankton (Chl a)
1	1	✓	✓	✓	✓	✓	✓	✓						
1	14	✓	✓	✓	✓	✓	✓	✓						
	19										1A & 1B			
2	1	✓	✓	✓	✓	✓	✓	✓						
2	20	✓	✓	✓	✓	✓	✓	✓						
	29										2A & 2B			
3	1	✓	✓	✓	✓	✓	✓	✓						
3	6	✓	✓	✓	✓	✓	✓	✓						
	7										3A & 3B			

DETAILED LAKE SURVEY

F.R.E.D. Division
Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) GRIZZLY LK COPPER RIVER DRAINAGE Sample station designation and depth STATION # 1 21 (m). Weather & lake surface conditions MOSTLY SUNNY, SLIGHT BREEZE, 5 M.P.H. N.W.

Date 6-7-92 Name(s) of sampling personnel STADTMILLER, CATLEDGE

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incidence Light Level Up	Down
Incidence				5000	1500		
Surface	14.2	10.0		1800	35		
0.5	14.2	10.4		1500	25		
1.0	14.2	11.0		1000	22		
1.5	14.2	11.1		700	9.0		
2.0	14.2	11.2		520	7.2		
2.5	14.2	11.2		270	6.0		
3.0	14.2	11.1		220	4.2		
3.5	14.2	11.0		210	3.0		
4.0	14.2	10.9		160	2.7		
4.5	14.2	10.9		120	27		
5.0	14.2	10.8		81	1.8		
5.5	14.0	10.7		63	1.4		
6.0	13.9	10.6		45	1.2		
7.0	13.9	10.4		30	.47		
8.0	12.5	10.1		19	.27		
9.0	12.2	10.0		12	.16		
10.0	12.1	9.9		6.5	.13		
11.0	11.8	9.8					
12.0	11.1	9.7					
13.0	11.0	9.6					
14.0	10.6	9.5					
15.0	10.2	9.4					
16.0	9.9	9.3					
17.0	9.1	8.9					
18.0	8.8	8.8					
19.0	8.8	8.9					
20.0	7.9	8.8					

Water samples collected for analyses YES Depths 1 (m) 14 (m)
samples filtered in lab _____ or field _____

Secchi disc: Depth(s) disc disappeared/reappeared 5 / 4.5 (m) x 4.75

Zooplankton: Number of tows: 2 Tow depth 19 Tow angle VERTICLE
Net size .5 153 µ Preserved separately YES
Preservative 10% NEUTRALIZED FORMALIN

Comments: DI = 10

DETAILED LAKE SURVEY

F.R.I..D. Division
Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) CRESCENT LK COPPER RIVER DRAINAGE Sample station designation and depth STATION #2, 31 M. (m). Weather & lake surface conditions MOSTLY SUNNY, WINDY, SMALL WHITE CAPS 10 M.P.H. N.

Date _____ Name(s) of sampling personnel STADTMILLER, CATLEDGE

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Solar Illuminence (Foot Candles) Down	% Incidence Light Level Up	% Incidence Light Level Down
Incidence				6000	1500		
Surface	13.8	10.0		1800	22		
0.5	13.8	10.8		480	13		
1.0	13.8	11.0		400	10		
1.5	13.8	11.5		450	6.1		
2.0	13.8	11.6		350	6.5		
2.5	13.8	11.6		450	9.0		
3.0	13.8	11.6		500	10		
3.5	13.8	11.6		350	6.2		
4.0	13.8	11.6		260	4.8		
4.5	13.8	11.5		200	3.6		
5.0	13.7	11.5		200	3.1		
5.5	13.7	11.3		150	2.3		
6.0	13.6	11.3		130	2.1		
7.0	13.5	11.1		120	1.5		
8.0	12.9	10.9		70	1.1		
9.0	12.8	10.7		31	.51		
10.0	12.2	10.6		21	.33		
11.0	11.9	10.4		11	.20		
12.0	11.2	10.2					
13.0	10.8	10.2					
14.0	9.0	9.9					
15.0	8.9	9.8					
16.0	8.7	9.7					
17.0	7.9	9.7					
18.0	7.8	9.5					
19.0	7.6	9.3					
20.0	7.1	9.2					
25.0	6.8	8.9					
30.0	6.5	5.0					

Water samples collected for analyses YES Depths 1 (m) 20 (m)
samples filtered in lab _____ or field _____

Secchi disc: Depth(s) disc disappeared/reappeared 4.5 / 4 (m) x 4.25

Zooplankton: Number of tows: 2 Tow depth 29 Tow angle VERTICLE
Net size .5 153 u/ Preserved separately YES
Preservative 10% NEUTRAL BUFFERED FORMALIN

Comments: _____

F.R.E.D. Division
Limnology Section

Field Form

Lake identification (note name, drainage, bay or fjord receiving drainage) CROSSWIND LK, COPPER RIVER DRAINAGE

and depth STATION #3, 10 M. (±). Sample station designation. Weather & lake surface conditions CLOUDY, WIND OUT of N. 5 M.P.H.

Date _____ Name(s) of sampling personnel STADTMILLER, CATLEDGE

PHYSICAL & CHEMICAL PARAMETERS:

Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/l)	% Oxygen Saturation	Solar Illuminence (Foot Candles) Up	Down	% Incident Light Level Up	Down
Incidence							
Surface	13.8	10.0		1800	300		
0.5	13.3	10.1		450	5.9		
1.0	13.2	11.2		300	3.5		
1.5	13.8	11.4		200	3.4		
2.0	13.8	11.5		160	3.3		
2.5	13.8	11.3		140	2.3		
3.0	13.6	11.7		120	2.6		
3.5	13.6	11.5		100	1.9		
4.0	13.4	11.7		89	2.0		
4.5	12.4	11.6		76	1.8		
5.0	13.1	11.8		63	1.3		
6.0	13.1	11.7		46	1.1		
7.0	12.2	11.4		57	1.5		
8.0	11.8	11.2		30	.6		
9.0	11.1	11.1		21	.46		
10.0	10.9	10.8		14	.31		
11.0				13	.29		
12.0							
13.0							
14.0							
15.0							
16.0							
17.0							
18.0							
19.0							
20.0							

Water samples collected for analyses YES Depths 1 (m) 6 (m)
samples filtered in lab _____ or field _____

Secchi disc: Depth(s) disc disappeared/reappeared 4 13.5 (m) x 3.75

Zooplankton: Number of tows: 2 Tow depth 7 Tow angle VERTICLE
Net size .5 153 μ Preserved separately YES
Preservative 10% NEUTRALIZED FORMALIN

Comments: