

DFO - Library / MPO - Bibliothèque



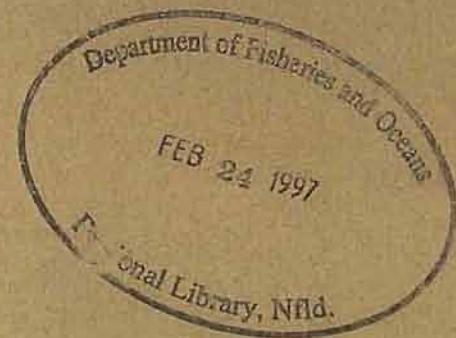
08003761

Pre-Logging Data on Macroinvertebrate Drift from the Takla Lake tributaries, in the Central Interior of British Columbia from 1991-1994

E.M. Choromanski, J.S. Macdonald, B.C. Andersen and
J.C. Scrivener

Department of Fisheries and Oceans
Science Branch, Pacific Region
West Vancouver Laboratory
4160 Marine Drive
West Vancouver, British Columbia V7V 1N6

1996



Canadian Data Report of Fisheries and Aquatic Sciences 998



Fisheries
and Oceans

Pêches
et Océans

Canada

Canadian Data Report of Fisheries and Aquatic Sciences

Data reports provide a medium for filing and archiving data compilations where little or no analysis is included. Such compilations commonly will have been prepared in support of other journal publications or reports. The subject matter of data reports reflects the broad interests and policies of the Department of Fisheries and Oceans, namely, fisheries and aquatic sciences.

Data reports are not intended for general distribution and the contents must not be referred to in other publications without prior written authorization from the issuing establishment. The correct citation appears above the abstract of each report. Data reports are abstracted in *Aquatic Sciences and Fisheries Abstracts* and indexed in the Department's annual index to scientific and technical publications.

Numbers 1-25 in this series were issued as Fisheries and Marine Service Data Records. Numbers 26-160 were issued as Department of Fisheries and the Environment, Fisheries and Marine Service Data Reports. The current series name was introduced with the publication of report number 161.

Data reports are produced regionally but are numbered nationally. Requests for individual reports will be filled by the issuing establishment listed on the front cover and title page. Out-of-stock reports will be supplied for a fee by commercial agents.

Rapport statistique canadien des sciences halieutiques et aquatiques

Les rapports statistiques servent à classer et à archiver les compilations de données pour lesquelles il y a peu ou point d'analyse. Ces compilations auront d'ordinaire été préparées à l'appui d'autres publications ou rapports. Les sujets des rapports statistiques reflètent la vaste gamme des intérêts et des politiques du ministère des Pêches et des Océans, c'est-à-dire les sciences halieutiques et aquatiques.

Les rapports statistiques ne sont pas destinés à une vaste distribution et leur contenu ne doit pas être mentionné dans une publication sans autorisation écrite préalable de l'établissement auteur. Le titre exact paraît au-dessus du résumé de chaque rapport. Les rapports statistiques sont résumés dans la revue *Résumés des sciences aquatiques et halieutiques*, et ils sont classés dans l'index annuel des publications scientifiques et techniques du Ministère.

Les numéros 1 à 25 de cette série ont été publiés à titre de relevés statistiques, Services des pêches et de la mer. Les numéros 26 à 160 ont été publiés à titre de rapports statistiques du Service des pêches et de la mer, ministère des Pêches et de l'Environnement. Le nom actuel de la série a été établi lors de la parution du numéro 161.

Les rapports statistiques sont produits à l'échelon régional, mais numérotés à l'échelon national. Les demandes de rapports seront satisfaites par l'établissement auteur dont le nom figure sur la couverture et la page du titre. Les rapports épuisés seront fournis contre rétribution par des agents commerciaux.

Canadian Data Report of
Fisheries and Aquatic Sciences 998

1996

Pre-Logging Data on Macroinvertebrate Drift from the Takla Lake tributaries, in the
Central Interior of British Columbia from 1991-1994

by

E.M. Choromanski, J.S. Macdonald, B.C. Andersen¹ and J.C. Scrivener¹

Department of Fisheries and Oceans
Science Branch, Pacific Region
West Vancouver Laboratory
4160 Marine Drive
West Vancouver, British Columbia V7V 1N6

¹ Department of Fisheries and Oceans
Science Branch, Pacific Region
Pacific Biological Station
Nanaimo, British Columbia V9R 5K6

(c) Minister of Supply and Services Canada 1996
Cat. No. Fs 97-13/998E ISSN 0706-6465

Correct citation for this publication:

Choromanski, E.M., J.S. Macdonald, B.C. Andersen and J.C. Scrivener. 1996. Pre-logging data on macroinvertebrate drift from the Takla Lake tributaries, in the central interior of British Columbia from 1991-1994. Can. Data. Rep. Fish. Aquat. Sci. 998: 119 p.

TABLE OF CONTENTS

List of Tables.....	iv
List of Figures.....	iv
Abstract.....	v
Résumé.....	v
1. Introduction.....	1
2. Study Area.....	1
3. Methods and Materials.....	2
4. Results.....	3
5. References.....	4

LIST OF TABLES

- Table 1. Invertebrate drift sampling dates and locations, 1991-1994, from Bivouac, Gluskie, Forfar and O'Ne-eil (Kynoch) creeks.
Table 2. Geographical coordinates of sampling locations with station descriptions.
Table 3. Identification key to food item codes in Table 4.
Table 4. Invertebrate drift data, physical parameters and abundance by taxa 1991-1994.

LIST OF FIGURES

- Figure 1. Map of the study area showing the location of experimental tributaries in the Stuart-Takla watersheds basin.

ABSTRACT

Choromanski, E.M., J.S. Macdonald, B.C. Andersen and J.C. Scrivener. 1996. Pre-logging data on macroinvertebrate drift from the Takla Lake tributaries, in the central interior of British Columbia from 1991-1994. Can. Data Rep. Fish. Aquat. Sci. 998: 119 p.

This report serves as a repository for tabular data pertaining to the abundance and species composition of drift macroinvertebrate collected from creeks entering Takla Lake and the Middle River. Sampling was carried out at Bivouac, Gluskie, Forfar and O'Neil creeks. A combined total of 528 individual samples were collected from spring 1991 to fall 1994. Geographical coordinates of sampling locations with station habitat descriptions are provided. Water temperature ($^{\circ}\text{C}$), depth (cm), and current velocity ($\text{m}\cdot\text{s}^{-1}$) measurements were also made and are presented for each sample collected.

RÉSUMÉ

Choromanski, E.M., J.S. Macdonald, B.C. Andersen and J.C. Scrivener. 1996. Pre-logging data on macroinvertebrate drift from the Takla Lake tributaries, in the central interior of British Columbia from 1991-1994. Can. Data Rep. Fish. Aquat. Sci. 998: 119 p.

Le présent rapport renferme des données sous forme de tableau concernant l'abondance et la composition en espèces des macroinvertébrés migrateurs prélevés dans des ruisseaux se jetant dans le lac Takla et la rivière Middle. Les échantillons ont été prélevés dans les ruisseaux Bivouac, Gluskie, Forfar et O'Neil. Cinq-cent-vingt-huit échantillons individuels ont été prélevés entre le printemps 1991 et l'automne 1994. On a mesuré les coordonnées géographiques de l'endroit où les échantillons ont été prélevés ainsi qu'une description de l'habitat. On a également mesuré la température de l'eau ($^{\circ}\text{C}$), la profondeur (cm) et la rapidité du courant ($\text{m}\cdot\text{s}^{-1}$) pour chaque échantillon prélevé.

INTRODUCTION

Forestry activities in mountainous terrain in the interior of B.C. may have adverse impacts on aquatic macroinvertebrate communities. Sedimentation and stream temperature changes related to logging may have an impact on insect fecundity, community structure and emergence timing (Lenat et al. 1981). This is one of the concerns that has led to the initiation of a multi - agency project to study the effects of forest practices on sockeye salmon (*Oncorhynchus nerka*) and aquatic macroinvertebrate production in the Stuart-Takla watersheds (Macdonald et al. 1992). New fish/forestry guidelines for interior areas of British Columbia will be developed or tested based on the results from this and other research projects.

STUDY AREA

The Stuart -Takla watersheds are in the Omineca Mountains of the Canadian Cordillera. The tributaries represent the northern extent of B.C.'s Fraser River system. Takla Lake is drained by Middle River and enters the Fraser after flowing through Trembleur and Stuart lakes and the Nechako River (Fig.1). Approximately 40 tributaries to Takla River comprise the spawning grounds for the early run of the Stuart-Takla sockeye salmon (Harder et al. 1989). Of these, 6 watersheds have been chosen as sites for the Takla Fishery/Forestry Interaction Study; a study that examines the physical and biological processes associated with watershed ecosystems in B.C.'s interior (Fig.1)(Macdonald et al. 1992). Geographical coordinates of sampling stations were obtained by Garmin Global Positioning System (GPS) Model 75 Personal Navigator.

This report describes drift insect communities collected from spring to fall 1991-94 in 4 of the 6 study streams (Bivouac, Gluskie, Forfar and O'Neil creeks). These streams are less than 20 km. long, drain watersheds of 40-70 km² and each flow through 1-4 kms of low gradient floodplains which are the sites of the majority of spawning activity. They have received little anthropogenic perturbation and there has been no recent forest fire activity. The riparian forests are generally 100 + years old. Detailed descriptions of the experimental watersheds and the research activities has been provided by Macdonald et al. (1992), Bernard (1994) and Macdonald (1994).

METHODS AND MATERIALS

A modified Mundie and Cushing apparatus for sampling drifting organisms in streams (Cushing 1964) was used to collect invertebrates. The sampler was constructed of aluminum alloy with 2.54x15.24 cm funnel-shaped intake and 23.5x13.5cm discharge chamber outlet to which was attached a 200 micron Nitex collecting net. A small intake aperture increasing to a larger discharge opening was used to reduce back pressure. The inner metal surface was polished to prevent insect larvae from escaping from the sampler. Two metal rods were driven into the streambed at selected locations and depth. The sampler had two adjustable supports attached to the sides which allowed it to be set up on the rods at selected depths. Once adjusted to ensure that the intake was not resting on the streambed, the percentage of the aperture submerged in the stream and the current velocity at the aperture were recorded to allow calculation of the volume of water sampled. This allowed the data to be presented on a quantitative basis per unit volume of water. This sampling device and methodology was used by Slaney et al. (1977) in the Slim Creek watershed and Hartman and Scrivener (1990) at Carnation Creek. Sampling sites were established in the center of riffle habitats, on the flood plains, near the mouth of each stream. Two samplers were set side by side at each station and allowed to collect for 24 hours. Water temperature ($^{\circ}\text{C}$), depth (cm), and current velocity ($\text{m}\cdot\text{s}^{-1}$) measurements were taken at the beginning and end of the sampling period. Each sampler location in a creek at the sampling site was described as being on the south or north side of the river. Sampling was conducted as early as March and as late as December. From April to late June samples were collected on two consecutive days every week to coincide with the emergence and out-migration of sockeye fry. Sampling frequency was reduced to twice per month for the rest of the season. When sampling was completed, the net was removed and lifted from the water, the contents washed into the collecting bucket or cod-end and the sample emptied into a jar. The samples were preserved in 5% formalin in the field.

At the laboratory samples were rinsed under tap water over a series of 850, 250 and 150 μm screens until the presence of formaldehyde was undetectable. Each sample was split using a two chamber plankton splitter. Splits were conducted until a sub-sample of 25-50% of their original volumes was obtained to facilitate sorting and identification. Remaining sample was preserved in 50% isopropanol alcohol. The organisms were identified to the lowest possible taxonomic level using a Wild Microscope. Specimens of major taxonomic groups were enumerated, arranged chronologically and sorted by species and life stage. Total numbers for the sample were then estimated by extrapolation using the split fraction value. The total taxonomic categories (Tp.) in each sample and the density of the drift ($\text{m}\cdot\text{s}^{-1}$, Dd.) were calculated.

RESULTS

In total, 528 samples were collected from the beginning of the 1991 sampling season to the end of the 1994 season (Table 1). The latitude and longitude of sampling locations with stations characteristics are provided (Table 2). Table 3 summarizes the taxonomic categories sampled and provides data base coding information. Summaries of the physical parameters collected during sampling and the abundance and taxonomic composition of drift macroinvertebrates are provided (Table 4). The blanks in the taxonomic categories in Table 4 are zeros. Physical measurements were not taken on some occasions as indicated by blanks in Table 4.

REFERENCES

- Cushing, C.E. 1964. An apparatus for sampling drifting organisms in streams. *J. Wildlife Manag.* 28:592-593.
- Bernard, D.P. et al. 1994. Stuart-Takla Fisheries/Forestry Interaction Project: Research Design Workshop. Min. Environ., Fish and Wildl. Branch, Fish. Tech. Circ. No. 96: 58.
- Macdonald, J.S. , J.C. Scrivener, and G. Smith. 1992. The Stuart -Takla Fisheries/ Forestry Interaction Project: Study Description and Design. Can. Tech. Rep. Fish. Aquat. Sci. 1899:39p.
- Macdonald, J.S. 1994. Proceeding of the Takla Fishery/Forestry Workshop: A two year review April1, 1993, Prince George, B.C. Can. Tech. Rep. Fish. Aquat. Sci. 2007:104.
- Harder, P.A., and Associates. 1989. An overview of fish resources in the Stuart-Takla watershed and an assessment of potential resource use conflicts. Internal consultants report of Fisheries and Oceans Canada , Fisheries Branch, Vancouver. 88p. appendices.
- Hartman, G.F. and J.C. Scrivener 1990. Impacts of forestry practices on a coastal stream ecosystem, Carnation Creek, British Columbia. *Can. Bull. Fish. Aquat. Sci.* 223:148.
- Lenat, D.R., D.L. Pemose and K.W. Eagleson. 1981. Variable effects of sediment addition on stream benthos. *Hydrobiologia* 79:187-194.
- Slaney, P.A., T.G. Halsey, and H.A. Smith. 1977. Some effects of forest harvesting on salmonid rearing habitat in two streams in the central interior of British Columbia. B.C. Min. Environ., Fish and Wildl. Branch, Fish. Manage. Rep. No.71.

Table 1. Invertebrate drift sampling dates and locations, 1991-1994, from Bivouac, Gluskie, Forfar and O'Ne-eil creeks.

YEARS/DATE	Set-Coll.	Number of Samples Collected				Monthly Total
		Bivouac	Gluskie	Forfar	O'Ne-eil	
1991						
Apr	19-21	4	4	4	4	
Apr	24-26		1	1		18
May	02-03		1	1		
May	09-11		1	1		
May	17-18		1	1		6
Jun	15-17	4	4	4	4	16
Jul	19-22	2	2	2	6	12
Oct	03-04		4	4	4	12
Total		10	18	18	18	64
1992						
Mar	11-13		4	3	3	10
Apr	26-28	3	3	4	4	14
May	14-16	4	4	4	4	
May	19-20		2	2	2	
May	29-31	4	3	3	3	35
Jun	09-13	2	3	4	4	
Jun	14-18	2	4	4	4	
Jun	26-30	4	4	4	4	43
Jul	11-13	2	2	2	2	
Jul	21-25	4	4	4	4	
Jul	26-28		4	4	4	36
Aug	03-06	2	2	2	2	
Aug	19-24	4	4	4	4	24
Sep	01-03	4	4	3	4	
Sep	22-24		3	3	6	
Sep	29-30	2				29
Total		37	50	50	54	191
1993						
Apr	17-20	4	4	3	4	15
May	07-09	4	4	4	4	
May	28-30	4	4	4	4	32
Jun	07-09	4	4	4	3	
Jun	22-26	4	4	4	4	31
Jul	06-08	4	4	4	4	
Jul	23-25	4	4	4	4	32
Sep	15-17	4	4	4	4	
Sep	21-23	4	4	4	4	32
Dec	09-12		3	2	2	7
Total		36	39	37	37	149
1994						
Mar	15-17		4	4	4	12
Apr	24-25	4	4	4	4	16
Jun	01-02	4	4	4	4	
Jun	19-21	4	4	4	4	32
Jul	19-21	4	4	4	4	16
Aug	13-15	4	4	4	4	16
Sep	15-17	4	4	4	4	
Sep	23-25	4	4	4	4	32
Total		28	32	32	32	124

Table 2. Geographical coordinates of sampling locations with station descriptions.

Creeks	GPS station coordinates		Descriptions
	Lat.	Long.	
Bivouac	55°04'24.3 N	125°34'17.3 W	- 500 m upstream from Takla Lake at a location where an old logging bridge was located. Collections were made in a run/riffle habitat. Substrate was cobble (60%), boulder (20%), and gravel (20%).
Gluskie	55°03'19.5 N	125°30'55.8 W	-150 m upstream from Takla Lake at the bottom of a riffle. Substrate was gravel (50%), sand (45%), and peagravel (5%). South Bank was composed of a gravel bar. The north bank was cut into the riparian vegetation.
Forfar	55°02'27.1 N	125°28'04.0 W	-150 m upstream from the Middle River at the lower part of a run. Substrate was gravel (80%), peagravel (10%), and sand (10%).
O'Ne-eil	55°00'04.9 N	125°23'41.2 W	-245 m upstream from the Middle River at the lower part of a riffle. Substrate was gravel (75%), silt (5%), and sand (20%).

Table 2. Identification key to food item codes.

Order	Family	Life Stage	Code	Order	Family	Life Stage	Code
	Genus				Genus		
COLLEMBOLA		adult	COLa		Culicidae	adult	Cula
COLLEMBOLA		larva	COLI		Culicidae	larva	Cull
	Entomobryidae	adult	Enta		Deuterophlebiidae	larva	Deul
	Hypogastruridae	adult	Hypa		Deuterophlebia	larva	Deusl
	Isotomidae	adult	Isoa		Dixidae	adult	Dixa
	Poduridae	adult	Poda		Dixidae	larva	Dixl
	<i>Podura</i> sp.	adult	Podsa		Dolichopodidae	adult	Dola
	Onychiuridae	adult	Onya		Dolichopodidae	larva	Doll
	Sminthuridae	adult	Smia		Empididae	adult	Empa
COLEOPTERA		adult	COa		Empididae	larva	Empl
COLEOPTERA		larva	COI		Ephydriidae	adult	Epha
	Amphizoidae	larva	Ampl		Ephydriidae	larva	Ephl
	Dytiscidae	adult	Dyta		Mycetophilidae	adult	Myca
	Dytiscidae	larva	Dyl		Mycetophilidae	pupa	Mycp
	<i>Agabus</i> sp.	larva	Agas/		Mycetophilidae	larva	Mycl
	<i>Hygrotus</i> sp.	adult	Hygsa		Muscidae	adult	Musa
	<i>Desmopachria</i> sp.	adult	Dessa		Muscidae	larva	Musl
	Hydrophilidae	larva	Hydl		Phoridae	adult	Phoa
	Lagriidae	adult	Laga		<i>Puliciphora</i> sp.	adult	Pulsa
	Rhysodidae	adult	Rhya		Psychodidae	larva	Psyl
	Staphylinidae	adult	Staa		<i>Pericoma</i> sp.	larva	Persl
	<i>Tachinus</i> sp.	larva	Tacs/		Ptychopteridae	adult	Ptya
	Scolytidae	adult	Scoa		Sciariidae	adult	Scia
	Heteroceridae	adult	Heta		<i>Sciara</i> sp.	adult	Scisa
DIPTERA		adult	DIpa		Simuliidae	adult	Sima
DIPTERA		pupa	DIPp		Simuliidae	pupa	Simp
DIPTERA		larva	DIPI		Simuliidae	larva	Siml
	Agromyzidae	adult	Agra		<i>Cnephia</i> sp.	adult	Cnesa
	Blephariceridae	larva	Blel		<i>Prosimulium</i> sp.	larva	Pros/
	<i>Dioptopsis</i> sp	larva	Dlos/		<i>Prosimulium</i> sp.	adult	Prosa
	Bibionidae	adult	Biba		<i>Twinnia</i> sp.	larva	Twisl
	Bombyliidae	adult	Boma		Tabanidae	adult	Taba
	Ceratopogonidae	adult	Cera		Tabanidae	larva	Tabl
	Ceratopogonidae	larva	Cerl		Tachinidae	adult	Taca
	<i>Forcipomyia</i> sp.	larva	Fors/		Tipulidae	adult	Tipa
	Chaoboridae	adult	Chaa		Tipulidae	pupa	Tipp
	<i>Chaoborus</i> sp.	adult	Chasa		Tipulidae	larva	Tipl
	Chironomidae	adult	Chia		<i>Tipula</i> sp.	larva	Tipsl
	Chironomidae	pupa	Chip		<i>Prionocera</i> sp.	larva	Prisl
	Chironomidae	larva	Chil		<i>Dicranota</i> sp.	larva	Dicsl
	<i>Ablabesmyia</i>	larva	Abis		<i>Gonomyia</i> sp.	larva	Gonsl
	Calliphoridae	larva	Call		<i>Hexatoma</i> sp.	larva	Hexsl
	<i>Phormia regina</i>	adult	Phoa		Stratiomyidae	larva	Strl
	Cecidomyiidae	adult	Ceca		Syrphidae	adult	Syra

Order	Family	Life Stage	Code	Order	Family	Life Stage	Code
Genus				Genus			
EPHEMEROPTERA		adult	EPHa	HYMENOPTERA cont.			
EPHEMEROPTERA		nymph	EPHn	Platygastridae		adult	Plaa
EPHEMEROPTERA		larva	EPHI	Scelionidae		adult	Scea
Heptageniidae		adult	Hepa	LEPIDOPTERA		pupa	LEPp
Heptageniidae		nymph	Hepn	LEPIDOPTERA		larva	LEPI
<i>Cinygmulia</i> sp.		nymph	Cinsn	Arctiidae		larva	Arcl
<i>Epeorus</i> sp.		nymph	Epesn	Nepticulidae		larva	Nepl
<i>Rhithrogena</i> sp.		nymph	Rhisn	Pyralidae		larva	Pyrl
Ephemerellidae		nymph	Epn	PLECOPTERA		adult	PLEa
<i>Caudatella</i> sp.		nymph	Causn	PLECOPTERA		nymph	PLEn
<i>Drunella</i> sp.		nymph	Drusn	PLECOPTERA		larva	PLEI
Leptophlebiidae		nymph	Lepn	Capniidae		adult	Capa
<i>Leptophlebia</i> sp.		nymph	Lepsn	<i>Paracapnia</i> sp.		adult	Parsa
Siphlonuridae		adult	Sipa	Nemouridae		nymph	Nemn
Siphlonuridae		nymph	Sipn	Nemouridae		larva	Neml
<i>Ameletus</i> sp.		nymph	Amesn	<i>Podmosta</i> sp.		nymph	Podsn
Baetidae		adult	Baea	<i>Zapaða</i> sp.		nymph	Zapsn
Baetidae		nymph	Baen	<i>Malenka</i> sp.		nymph	Malsn
<i>Baëtis</i> sp.		nymph	Baesn	Chloroperlidæ		nymph	Chln
HEMIPTERA		adult	HEMA	<i>Kathroperla</i> sp.		nymph	Katsn
HEMIPTERA		nymph	HEMn	<i>Utaperla</i> sp.		nymph	Urasn
Corixidae		adult	Cora	<i>Alloperla</i> sp.		nymph	Allsn
<i>Glaenocorisa propinqua</i>		adult	Glaa	<i>Paraperla</i> sp.		nymph	Parsn
Corixidae		larva	Corl	<i>Sweltsa</i> sp.		nymph	Swesn
Lygaeidae		larva	Lygl	<i>Haploperla</i> sp.		nymph	Hapsn
Macroveliidae		adult	Maca	<i>Suwallia</i> sp.		nymph	Suwsn
Mesovelidae		adult	Mesa	Leuctridæ		nymph	Leun
Saldidae		adult	Sala	Perlodidae		nymph	Pen
HOMOPTERA		adult	HOMa	<i>Isoperla</i> sp.		nymph	Isosn
HOMOPTERA		pupa	HOMp	Perlidae		nymph	Pern
Aphididae		adult	Apha	Pteronarcyidae		nymph	Pten
Aphididae		nymph	Aphn	Taeniopterygidae		nymph	Taen
Psyllidae		adult	PsyA	<i>Taenionema</i> sp.		adult	Taes
Psyllidae		nymph	Psyn	PSOCOPTERA		adult	PSOa
Cicadidae		adult	Cica	Psocidae		adult	Psoa
Cicadellidae		adult	Cia	ORTHOPTERA		nymph	ORTn
Cercopidae		adult	Cea	NEUROPTERA		adult	NEUa
Cercopidae		larva	Cel	Hemerobiidae		larva	Heml
HYMENOPTERA		adult	HYMa	Sialidae		larva	Sial
HYMENOPTERA		larva	HYMI	THYSANOPTERA		adult	THYa
Braconidae		adult	Braa	THYSANOPTERA		larva	THYI
Formicidae		adult	Fora	Phlaeothripidae		adult	Phla
Eulophidae		adult	Eula	Phlaeothripidae		larva	Phll
Ichneumonidae		adult	Icha	Thripidae		larva	Thrl
Mymaridae		adult	Myma				

Order	Family	Life Stage	Code	Order	Family	Life Stage	Code
Genus				Genus			
TRICHOPTERA		adult	TRIa	MEGALOPTERA			MEG
TRICHOPTERA		pupa	TRIp	ZYGOPTERA			ZYG
TRICHOPTERA		larva	TRII	ISOPTERA			ISO
Glossosomatidae		larva	GloI	MALLOPHAGA			MAL
<i>Glossosoma</i> sp.		larva	GlosI	INSECT		adult	INSa
<i>Anagapetus</i> sp.		larva	AnasI	INSECT		nymph	INSn
Hydroptilidae		larva	HydI	INSECT		pupa	INSp
Helicopsychidae		pupa	Help	INSECT		larva	INSI
Hydropsychidae		larva	HydI	INSECT EGGS			INSe
Limnephilidae		larva	LimI	ARANEAE		adult	ARAa
<i>Chyrranda</i> sp.		larva	ChysI	ACARINA		adult	ACAa
<i>Ecclysmomyia</i> sp.		larva	EccsI	NEMATOMORPHA			NEMM
<i>Homophylax</i> sp.		larva	HomsI	NEMATODA			NEM
<i>Clostoecea</i> sp.		larva	ClosI	OLIGOCHAETA			OLI
<i>Hesperophylax</i> sp.		larva	HessI	Piscicolidae			Pis
<i>Hydatophylax</i> sp.		larva	HydsI	GASTROPODA			GAS
Lepidostomatidae		larva	LepI	BIVALVIA			BIV
<i>Lepidostoma</i> sp.		pupa	LespI	Daphnia ad.			Dapa
Molannidae		pupa	MolI	OSTRACODA			OST
Polycentropodidae		larva	Poll	DIPLOPODA			DIP
Phryganeidae		larva	Phrl	<i>Lota lota (Burbot)</i>			Lota
<i>Ptilostomis</i> sp.		pupa	Ptisp	Total prey			Tp
Senicostomatidae		larva	SerI	Drift density			Dd
Rhyacophilidae		adult	Rhya				
Rhyacophilidae		larva	Rhyl				
<i>Rhyacophila</i> sp.		larva	RhysI				
<i>Himalopsyche</i> sp.		larva	HimsI				
Psychomyiidae		larva	Psyl				

Table 4. Invertebrate drift data, physical parameters and abundance by taxa 1991-1994.

year	sample	Creek	Site		Date Set mmddyy	Time Set h:m	Velocity Set m·s ⁻¹	Water Depth cm	Water Temp. °C	Date Collected mmddyy	Time Collected h:m	Velocity Collected m·s ⁻¹	Water Depth cm	Water Temp. °C	Volume m ³	Aperture Sampled	Aperture Set %	
			North	South														
1991	28-91	Bivouac	S	4/19/91	15:50	0.45				4/20/91	16:00	0.45			158.01		100	
1991	26-91	Bivouac	N	4/19/91	15:50	0.45				4/20/91	16:00	0.45			158.01		100	
1991	27-91	Forfar	N	4/19/91	13:30	0.65		1		4/20/91	13:30	0.8		1	250.78		100	
1991	32-91	Forfar	S	4/19/91	13:30	0.65		1		4/20/91	13:00	0.9		1	250.8		100	
1991	4-91	Gluskie	N	4/19/91	15:00	0.33				4/20/91	15:00	0.33			105.33		100	
1991	22-91	Gluskie	S	4/19/91	15:00	0.33				4/20/91	15:00	0.33			105.33		100	
1991	9-91	O'Ne-eil	S	4/19/91	16:50	0.5				4/20/91	17:30	0.6		1	171.83		100	
1991	6-91	O'Ne-eil	N	4/19/91	16:55	0.4				4/20/91	17:30	0.6		1	171.83		100	
1991	8-91	Bivouac	N	4/20/91	16:00	0.6		1		4/21/91	16:15	0.6		1	185.65		100	
1991	12-91	Bivouac	S	4/20/91	16:00	0.6		1		4/21/91	16:15	0.6		1	185.65		100	
1991	13-91	Forfar	S	4/20/91	13:30	0.8		1		4/21/91	14:30	0.84		2.4	294.3		100	
1991	15-91	Forfar	N	4/20/91	13:30	0.9		1		4/21/91	14:30	0.84		2.4	294.3		100	
1991	1-91	Gluskie	N	4/20/91	15:00	0.43				4/21/91	15:30	0.43		1.2	124.59		100	
1991	3-91	Gluskie	S	4/20/91	15:00	0.43				4/21/91	15:30	0.43		1.2	124.59		100	
1991	29-91	O'Ne-eil	S	4/20/91	17:30	0.75				4/21/91	17:25	0.75		1.5	224.91		100	
1991	11-91	O'Ne-eil	N	4/20/91	17:30	0.75				4/21/91	17:25	0.75		1.5	224.91		100	
1991	60-91	Gluskie	S	4/24/91	21:00					4/25/91	23:00				295.22		100	
1991	66-91	Forfar	S	4/25/91	20:30			1.1		4/26/91	21:00				1.3	249.18		100
1991	63-91	Forfar	N	5/2/91	17:00			3.5		5/3/91	17:00				3.5	326.01		100
1991	92-91	Gluskie	N	5/2/91	18:00					5/3/91	18:00				336.04		100	
1991	91-91	Forfar	S	5/9/91	19:30			3.5		5/10/91	19:40				3.7	329.96		100
1991	78-91	Gluskie	S	5/10/91	19:30					5/11/91	20:00				375.47		100	
1991	89-91	Forfar	N	5/17/91	18:00			5.3		5/18/91	20:00				4.6	360.42		100
1991	69-91	Gluskie	S	5/17/91	18:00					5/18/91	20:30				601.79		100	
1991	14-91	Bivouac	S	6/15/91	12:40	1.18	30			6/16/91	11:30	1.18	30		343.57		100	
1991	13-91	Bivouac	N	6/15/91	12:40	1.08	24			6/16/91	11:30	1.08	24		375.38		100	
1991	50-91	Forfar	S	6/15/91	15:50	0.78	22	6		6/16/91	14:00	0.78	21	6	228.84		100	
1991	26-91	Forfar	N	6/15/91	15:50	1.03	40	6		6/16/91	14:00	1.03	39	6	302.19		100	
1991	29-91	Gluskie	N	6/15/91	14:20	0.69	27			6/16/91	12:30	0.69	27		213.09		100	
1991	28-91	Gluskie	S	6/15/91	14:20	1.37	38			6/16/91	12:30	1.37	38		423.09		100	
1991	21-91	O'Ne-eil	S	6/15/91	10:30	1.44	33			6/16/91	10:25	1.44	33		431.84		100	
1991	36-91	O'Ne-eil	N	6/15/91	10:30	1.54	29			6/16/91	10:25	1.54	27		461.82		100	
1991	34-91	Bivouac	S	6/16/91	11:40	1.18	30			6/17/91	10:20	1.18	30		341.06		100	
1991	31-91	Bivouac	N	6/16/91	11:40	1.08	24			6/17/91	10:20	1.08	24		372.64		100	
1991	39-91	Forfar	N	6/16/91	14:10	1.03	39	6		6/17/91	15:10	1.03	39	6.7	322.88		100	
1991	27-91	Forfar	S	6/16/91	14:10	0.78	21	6		6/17/91	15:10	0.78	21	6.7	244.51		100	
1991	42-91	Gluskie	S	6/16/91	12:50	1.37	38	6.3		6/17/91	11:00	1.38	38	6.5	423.09		100	
1991	47-91	Gluskie	N	6/16/91	12:50	0.69	27	6.3		6/17/91	11:00	0.69	27	6.5	213.09		100	
1991	37-91	O'Ne-eil	N	6/16/91	10:45	1.54	29			6/17/91	11:40	1.54	27		481.13		100	
1991	15-91	O'Ne-eil	S	6/16/91	10:45	1.44	31			6/17/91	11:40	1.44	31		449.89		100	
1991	40-91	Bivouac	N	7/19/91	14:15	0.5	17			7/20/91	14:15	0.5	17		167.19		100	
1991	35-91	Bivouac	S	7/19/91	14:15					7/20/94	14:15				180.56			
1991	43-91	Forfar	N	7/19/91	12:45	0.7	16	9.8		7/20/91	15:10	0.7	16	9.4	257.63		100	
1991	93-91	Forfar	S	7/19/91	12:45	0.55	16	9.8		7/20/91	15:10	0.55	16	9.4	257.63		100	
1991	08-91	Gluskie	N	7/19/91	14:45	0.65	16	9.5		7/20/91	14:45	0.65	16	8.9	217.34		100	
1991	04-91	Gluskie	S	7/19/91	14:45	0.6	16	9.5		7/20/91	14:45	0.6	16	8.9	200.62		100	
1991	97-91	O'Ne-eil	N	7/20/91	15:30	0.35	16			7/21/91	15:50	0.35	16		112.72		100	
1991	30-91	O'Ne-eil	S	7/20/91	15:30	0.47	16			7/21/91	16:00	0.47	16		160.43		100	
1991	94-91	O'Ne-eil	S	7/20/91	15:45	0.87	17			7/22/91	15:00	0.87	17	13	480.55		100	
1991	51-91	O'Ne-eil	N	7/20/91	15:45	0.73	18			7/22/91	15:00	0.73	10	13	480.55		100	
1991	95-91	O'Ne-eil	S	7/20/91	16:50	0.49	16			7/21/91	16:30	0.49	16		161.56		100	
1991	18-91	O'Ne-eil	N	7/20/91	16:50	0.42	15			7/21/91	16:30	0.42	15		135.02		100	
1991	01-91	Forfar	S	10/3/91	14:20	0.21	16	5.6		10/4/91	14:00	0.21	16	4.8	126.95		100	

year sample	S c o o r a	H e t P a	D I P a	D I P l	A g r p	B i e l	D i o s i	B i b a	B o m a	C e r a	C e r l	F o r s i	C h a a	C h a s	C h i a	C h i p	C h i l	A b / s	C a l	P h o e	C e c a
1991 28-91																			180		
1991 26-91																			208		
1991 27-91			4	4															108		
1991 32-91			12	12															246		
1991 4-91																			102		
1991 22-91					6																
1991 9-91					4	8													640		
1991 6-91					42														1356		
1991 8-91						4													18	160	
1991 12-91						6													114		
1991 13-91																			480		
1991 15-91					12													348	312		
1991 1-91																			4		
1991 3-91																			10		
1991 29-91			6	36															2826		
1991 11-91				44															2028		
1991 60-91																			192		
1991 66-91			4	4														380	496		
1991 63-91																		324			
1991 92-91						2	2												42	55	
1991 91-91																			174		
1991 78-91																			228		
1991 89-91			4															242		96	
1991 69-91																				68	
1991 14-91				4	176															48	
1991 13-91				16																48	
1991 50-91																				192	
1991 26-91			8																	60	
1991 29-91			40	4										12						8	48
1991 28-91			212																	4	
1991 21-91			36	32	8									4					584	180	
1991 36-91			88	48	24									4					664		
1991 34-91			252	4	4														56	12	
1991 31-91			64	204	68														60		
1991 39-91			124		40	60													344		
1991 27-91			12	176										24					316		
1991 42-91				16															220		
1991 47-91			36	56	8									6					260		
1991 37-91			24	24										8					408	152	
1991 15-91			44	12	280														4		
1991 40-91			52	12	24									148		4					
1991 35-91			20	16	16														140		
1991 43-91					160														336		
1991 93-91																				84	
1991 08-91			16																	352	
1991 04-91			24		40															968	
1991 97-91														2						100	158
1991 30-91			40																	376	
1991 94-91				24																136	
1991 51-91			8	8																792	
1991 95-91			6																	762	
1991 18-91				8																1624	
1991 01-91																		2		68	2

year	sample	C u l i a	C u l i a	D e u s u	D i x x a	D o l a	D o l a	E m p a	E m p a	E p l	M y c a	M y c a	M y c a	M u s a	M u s a	P h o a	P u s a	P s y l	P r e s s	P t y a	S c i a	S c i a	S i m p	
1991	28-91																							
1991	26-91	4																						4
1991	27-91																							
1991	32-91	6																						
1991	4-91																							
1991	22-91																							
1991	9-91																							
1991	6-91																							
1991	8-91																							
1991	12-91																							
1991	13-91																							
1991	15-91																							
1991	1-91																							
1991	3-91																							
1991	29-91																							
1991	11-91																							
1991	60-91																							
1991	66-91																							
1991	63-91																							12
1991	92-91																							
1991	91-91																							
1991	78-91	12														4								
1991	89-91																							
1991	69-91																							
1991	14-91																							
1991	13-91	48																						
1991	50-91																							
1991	26-91																							4
1991	29-91	12																						
1991	28-91																							
1991	21-91															4								
1991	36-91	4																						4
1991	34-91																							
1991	31-91	8																						
1991	39-91																							
1991	27-91																							
1991	42-91																							
1991	47-91																							
1991	37-91																							4
1991	15-91	8																						
1991	40-91	8																						
1991	35-91																							
1991	43-91	8																						
1991	93-91																							
1991	08-91																							
1991	04-91																							
1991	97-91																							2
1991	30-91																							
1991	94-91																							
1991	51-91																							
1991	95-91																							
1991	18-91																							
1991	01-91																							

year	sample	S i m l	C e s s a	P r o s s a	T w o s s l	T a b a l	T a c a l	T i p a p	T i p s l	P r i s s l	D i c s s l	G o n s s l	H e x s s l	S t r a	S y r a	E P H	E P H	E P H	H e p n	C i n s n	E p e s n
1991	28-91	12																		12	
1991	26-91	16																		12	
1991	27-91																			4	
1991	32-91																		30		6
1991	4-91																			2	
1991	22-91	2																		18	
1991	9-91																				
1991	6-91																		6		30
1991	8-91	8																	2	2	12
1991	12-91																		6		6
1991	13-91																				6
1991	15-91																		6		18
1991	1-91																				
1991	3-91																				
1991	29-91	6																			30
1991	11-91	4																	4		24
1991	60-91																		8		
1991	66-91																		4		
1991	63-91																		4	4	4
1991	92-91																		2	2	2
1991	91-91																		4		
1991	78-91																	4	28		
1991	89-91																				4
1991	69-91																				
1991	14-91																		4		48
1991	13-91	16																16			16
1991	50-91																				8
1991	26-91	12																			4
1991	29-91	8																			48
1991	28-91																				4
1991	21-91																	8	4		16
1991	36-91	4																32	8		12
1991	34-91																	72	4		48
1991	31-91	17																	12		38
1991	39-91	8																			
1991	27-91																	12			24
1991	42-91																4	4	4		
1991	47-91																	36			4
1991	37-91	4																			16
1991	15-91																	16			40
1991	40-91																		8	80	
1991	35-91																	4			76
1991	43-91																8	8	8		8
1991	93-91																4	4			24
1991	08-91																	8			72
1991	04-91																				16
1991	97-91																				2
1991	30-91																	8			40
1991	94-91																				88
1991	51-91																				32
1991	95-91																	6			18
1991	18-91																				24
1991	01-91																	2			4

	R h i s n	C a u s n	D r u s n	L e p s n	S i p a	S i p a	A m e s n	B a e a	B a e n	B a s e n	H E M a	H E M a	C o r a	G i a a	C o r l	L y g i	M a c a	M e s a
year	sample																	
1991	28-91										90							
1991	26-91										68							
1991	27-91				4						124							
1991	32-91						6		6	276								
1991	4-91							6			2							
1991	22-91							4			24							
1991	9-91					20					120							
1991	6-91										156							
1991	8-91										82							
1991	12-91										68							
1991	13-91										64							
1991	15-91										96							
1991	1-91																	
1991	3-91																	
1991	29-91						12				132							
1991	11-91							8			124							
1991	60-91																	
1991	66-91					20				44								
1991	63-91						12			12								
1991	92-91							9		2								
1991	91-91																	
1991	78-91																	
1991	89-91								18									
1991	69-91							12			4							
1991	14-91								12		84							
1991	13-91							16			32							
1991	50-91										136							
1991	26-91						8			20								
1991	29-91									276			4					
1991	28-91																	
1991	21-91							8			40		8					
1991	36-91								32		16							
1991	34-91					4				4	96							
1991	31-91				4	32				4	148							
1991	39-91										4	176						
1991	27-91											136						
1991	42-91											320						
1991	47-91			52				104			44							
1991	37-91				4				8		48							
1991	15-91								12		4							
1991	40-91					4				4	24							
1991	35-91								60									
1991	43-91									16	2192							
1991	93-91									8		16	120					
1991	08-91				8					32	1528							
1991	04-91										32		544					
1991	97-91										102		110					
1991	30-91				24								2312					
1991	94-91												640					
1991	51-91												3304					
1991	95-91				6		6						504					
1991	18-91												1800					
1991	01-91													8				

year	sample	S e a r a p a	L E P I	L E P I	A r c l	N e p i l	P y r i l	P L E n a	P L E n i	C a p a	P a r s a	N e m n i	N e m i	P o d s n	Z a p s n	M a s s n	C h a l n	K a t s n	U r a s n	A l i s n	P a r s
1991	28-91							12		30	12			18							
1991	26-91										68				16						
1991	27-91										4				4						
1991	32-91										30				48						
1991	4-91										6				2						
1991	22-91								2	12				4							
1991	9-91																				
1991	6-91										156										
1991	8-91										6	10			6						
1991	12-91										8	16			4						
1991	13-91										36										
1991	15-91										54				12						
1991	1-91																				
1991	3-91																				
1991	29-91										18										
1991	11-91										20				4						
1991	60-91														4						
1991	66-91										40				12						
1991	63-91										24				4						
1991	92-91										6	2			2					2	
1991	91-91														2					2	
1991	78-91														4						
1991	89-91										12	12			2					12	
1991	69-91																				
1991	14-91										64										
1991	13-91										32										
1991	50-91										40									8	
1991	26-91										48										
1991	29-91										4	68								4	
1991	28-91								12	12											
1991	21-91								4		76	36									
1991	36-91										204	12			4					8	
1991	34-91										32	8			4						
1991	31-91										88				4					12	
1991	39-91										12		12							28	
1991	27-91										4									32	
1991	42-91										264									8	
1991	47-91										44									8	
1991	37-91										48										
1991	15-91										36				30					104	
1991	40-91										12	4			12					4	
1991	35-91										12				12					8	
1991	43-91																				
1991	93-91										4										
1991	08-91										48										
1991	04-91										72										
1991	97-91										16										
1991	30-91																				
1991	94-91										88										
1991	51-91										40										
1991	95-91																				
1991	18-91										8										
1991	01-91										136										

year	sample	S w e s s	H a p s s	S u w s s	L e u n n	I s e n n	P e r s n	P e r e n	T a e n n	T a e s a	P s o a a	P s o a a	O R T n	N E U n	H e m a	S i l	T H Y a	T H Y I	P h i	P h i	T h r i	T R I	T R I	T R I	
1991	28-91																								
																6									6
1991	26-91																								12
1991	27-91																								
1991	32-91																								
1991	4-91																								
1991	22-91																								
1991	9-91																								
1991	6-91																6								
1991	8-91																								14
1991	12-91																4								4
1991	13-91																								
1991	15-91																30								
1991	1-91																								
1991	3-91																								
1991	29-91																66								6
1991	11-91																4								
1991	60-91																56								8
1991	66-91																								
1991	63-91																20								4
1991	92-91																	6							2
1991	91-91																2	6							2
1991	78-91																44	8							4
1991	89-91																	16							8
1991	69-91																12								
1991	14-91																4								8
1991	13-91																								
1991	50-91																8								
1991	26-91																								16
1991	29-91																4								
1991	28-91																12	4							
1991	21-91																								16
1991	36-91																								8
1991	34-91																8								12
1991	31-91																								
1991	39-91																								
1991	27-91																								4
1991	42-91																8								4
1991	47-91																4								8
1991	37-91																8								16
1991	15-91																12								
1991	40-91																								
1991	35-91																								
1991	43-91																4								24
1991	93-91																								
1991	08-91																								
1991	04-91																								
1991	97-91																4								
1991	30-91																								
1991	94-91																								
1991	51-91																								
1991	95-91																36	6							
1991	18-91																								
1991	01-91																14	28							8

year	sample	Z Y G	I S O	M A L	 S O	 L	 a	 n	 p	 l	 e	A A a a	A C a a	N E M M	N E M M	O L I	P I s	G A S	B I V	D a P	O S T	D I P	L o t a	T p	D d	
1991	28-91																							564	3.57	
1991	26-91																							448	2.84	
1991	27-91																							284	1.13	
1991	32-91																							732	2.92	
1991	4-91																							126	1.20	
1991	22-91																							78	0.74	
1991	9-91																							792	4.61	
1991	6-91																							1764	10.27	
1991	8-91	6																						344	1.85	
1991	12-91																							252	1.36	
1991	13-91																							640	2.17	
1991	15-91																							894	3.04	
1991	1-91																							4	0.03	
1991	3-91																							10	0.08	
1991	29-91																							3144	13.98	
1991	11-91																							2276	10.12	
1991	60-91															4	4							288	0.98	
1991	66-91															4								1024	4.11	
1991	63-91																4							448	1.37	
1991	92-91																	20						165	0.49	
1991	91-91																4							194	0.59	
1991	78-91															8		4						364	0.97	
1991	89-91															2								446	1.24	
1991	69-91																							104	0.17	
1991	14-91															4								492	1.43	
1991	13-91																							304	0.81	
1991	50-91															8								418	1.83	
1991	26-91															4								244	0.81	
1991	29-91																	24						584	2.74	
1991	28-91															8		4						300	0.71	
1991	21-91															24								1140	2.64	
1991	36-91															4								1252	2.71	
1991	34-91																							648	1.90	
1991	31-91															4								807	2.17	
1991	39-91															4								936	2.90	
1991	27-91															8	12	4						816	3.34	
1991	42-91																							896	2.12	
1991	47-91															36	4	88	12						962	4.51
1991	37-91	8																						800	1.66	
1991	15-91															8								634	1.41	
1991	40-91																8		8					428	2.56	
1991	35-91																		20					388	2.15	
1991	43-91																	8						3852	14.95	
1991	93-91																		584					856	3.32	
1991	08-91																8							2192	10.09	
1991	04-91																							2696	13.44	
1991	97-91																		1012					1512	13.41	
1991	30-91																		512					3312	20.64	
1991	94-91																		680					1672	3.48	
1991	51-91																8							5696	11.85	
1991	95-91																		1480					1362	8.43	
1991	18-91																	8		528				4024	29.80	
1991	01-91																			456					728	5.73

year	sample	Creek	Site		Date Set mmddyy	Time Set h:m	Velocity Set m·s ⁻¹	Water Depth cm	Water Temp. °C	Date Collected mmddyy	Time Collected h:m	Velocity m·s ⁻¹	Water Depth cm	Water Temp. °C	Volume Sampled m ³	Aperture Set %
			North	South												
1991	99-91	Forfar	N		10/3/91	14:20	0.43	16	5.6	10/4/91	14:00	0.34	16	4.8	69.24	100
1991	10-91	Gluskie	N		10/3/91	15:20	0.52	16	5.5	10/4/91	18:00	0.52	16	5.2	191.33	100
1991	98-91	Gluskie	S		10/3/91	15:20	0.57	16	5.5	10/4/91	18:00	0.57	16	5.2	170.53	100
1991	11-91	O'Ne-eil	N		10/3/91	12:00	0.24	16		10/4/91	15:30	0.24	16		107.28	100
1991	03-91	O'Ne-eil	S		10/3/91	12:00	0.28	16		10/4/91	15:30	0.28	16		97.7	100
1991	00-91	Forfar	S		10/4/91	14:00	0.21	16	4.9	10/5/91	14:00	0.21	16	6	79.97	100
1991	19-91	Gluskie	N		10/4/91	18:00	0.5	16	5.2	10/5/91	16:15	0.5	16	5.5	142.63	100
1991	52-91	Gluskie	S		10/4/91	18:00	0.46	16	5.2	10/5/91	16:15	0.46	16	5.5	142.63	100
1991	24-91	O'Ne-eil	N		10/4/91	15:30	0.27	16		10/5/91	13:00	0.27	16		80.88	100
1991	02-91	O'Ne-eil	S		10/4/91	15:30	0.28	16		10/5/91	13:00	0.28	16		80.88	100
1992	57-92	Forfar	S		3/11/92	14:10	0.59		1.8	3/12/92	14:40	0.59		1.7	200	10
1992	43-92	Forfar	S		3/11/92	14:10	0.52		1.8	3/12/92	14:40	0.52		1.7	176.3	100
1992	74-92	Forfar	M		3/11/92	14:10	0.62		1.8	3/12/92	14:40	0.62		1.7	210.2	100
1992	50-92	Gluskie	S		3/11/92	17:00	0.71		0.6	3/12/92	16:00	0.71		0.5	227.5	100
1992	50-92	Gluskie	N		3/11/92	17:00	0.28		0.6	3/12/92	16:00	0.28		0.5	227.5	100
1992	54-92	O'Ne-eil	N		3/11/92	14:00	0.41		1.5	3/12/92	14:00	0.41		1.4	137	100
1992	46-92	O'Ne-eil	S		3/11/92	14:00	0.48		1.5	3/12/92	14:00	0.48		1.4	160.5	100
1992	73-92	O'Ne-eil	M		3/11/92	14:00	0.28		1.5	3/12/92	14:00	0.28		1.4	93.6	100
1992	49-92	Gluskie	N		3/12/92	17:00	0.28		0.5	3/12/92	10:50	0.28		0.4	89.7	100
1992	44-92	Gluskie	S		3/13/92	17:00	0.71		0.5	3/12/92	10:50	0.71		0.4	73.5	100
1992	15-92	Bivouac	S		4/26/92	14:10	1.08	27	2.6	4/27/92	14:40	0.5	27	2.6	267.8	100
1992	5-92	Bivouac	N		4/26/92	14:25	1.09	37	2.6	4/27/92	14:42	0.84	37	2.6	327.1	100
1992	6-92	Forfar	S		4/26/92	10:20	1.04	38	1.8	4/27/92	9:25	0.67	41	1.4	276	100
1992	7-92	Forfar	N		4/26/92	10:25	0.79	40	1.8	4/27/92	9:35	0.7	40	1.8	240.5	100
1992	11-92	Gluskie	N		4/26/92	13:15	1.06	29	2.9	4/27/92	12:50	0.8	32	2.5	241.6	100
1992	4-92	O'Ne-eil	N		4/26/92	11:45	0.64	40	2.1	4/27/92	11:10	0.43	40	2.1	174.6	100
1992	16-92	O'Ne-eil	S		4/26/92	11:55	0.51	31	2.1	4/27/92	10:30	0.6	31	2.1	174.6	100
1992	3-92	Forfar	S		4/27/92	9:40	0.83	33	1.4	4/28/92	9:20	0.35	30	1.5	194.6	100
1992	2-92	Forfar	N		4/27/92	9:45	0.62	39	1.4	4/28/92	9:25	0.48	35	1.5	181.4	100
1992	13-92	Gluskie	N		4/27/92	13:15	0.62	21	2.5	4/28/92	11:35	0.28	20	2.2	140	100
1992	10-92	Gluskie	S		4/27/92	13:30	0.35	24	2.5	4/28/92	11:30	0.48	25	2.2	127.2	100
1992	1-92	O'Ne-eil	N		4/27/92	10:30	0.43	23	1.8	4/28/92	10:35	0.24	21	1.9	112.4	100
1992	9-92	O'Ne-eil	S		4/27/92	11:55	0.38	28	1.8	4/28/92	10:30	0.17	16	1.9	86.5	100
1992	17-92	Bivouac	S		4/28/92	15:03	0.41	26		4/28/92	14:20	0.28	17	2.5	112.1	100
1992	20-92	Bivouac	N		5/14/92	15:00	0.84			5/15/92	14:50	0.88			285.5	100
1992	77-92	Bivouac	N		5/14/92	15:05	0.93			5/15/92	14:50	0.96			316	100
1992	38-92	Forfar	N		5/14/92	15:45	0.6		4.2	5/15/92	15:55	0.68		5	215.5	100
1992	79-92	Forfar	S		5/14/92	15:45	0.74		4.2	5/15/92	15:45	0.68		5	237.4	100
1992	18-92	Gluskie	S		5/14/92	13:50	0.64		4.3	5/15/92	13:45	0.58		4.5	203.3	100
1992	88-92	Gluskie	N		5/14/92	13:55	0.68		4.3	5/15/92	13:45	0.77		4.5	241.6	100
1992	78-92	O'Ne-eil	N		5/14/92	17:10	0.67		4.5	5/15/92	17:10	0.67		5	224	100
1992	86-92	Bivouac	N		5/15/92	15:00	0.96			5/16/92	14:20	0.65			261.7	100
1992	74-92	Bivouac	S		5/15/92	15:00	0.88			5/16/92	14:20	0.81			274.7	100
1992	01-92	Forfar	N		5/15/92	16:20	0.6		5	5/16/92	15:20	0.69		5.3	206.7	100
1992	91-92	Forfar	S		5/15/92	16:20	0.74		5	5/16/92	15:15	0.57		5.3	209.2	100
1992	96-92	Gluskie	S		5/15/92	13:20	0.58		4.5	5/16/92	13:20	0.8		5.4	197.3	100
1992	89-92	Gluskie	N		5/15/92	14:00	0.78		4.5	5/16/92	13:30	0.76		5.4	252.1	100
1992	97-92	O'Ne-eil	S		5/15/92	17:10	0.62		5	5/16/92	16:20	0.52		5.4	184	100
1992	85-92	O'Ne-eil	N		5/15/92	17:10	0.64		5	5/16/92	16:25	0.54		5.4	191.1	100
1992	98-92	O'Ne-eil	S		5/15/92	17:10	0.72		5	5/16/92	17:10	0.63		5.4	225.7	100
1992	84-92	Forfar	N		5/19/92	11:15	0.35	28	2.7	5/20/92	12:30	0.42	28	3.4	135.4	100
1992	99-92	Forfar	S		5/19/92	11:15	0.32	18	2.7	5/20/92	12:30	0.46	18	3.4	137.2	100
1992	90-92	Gluskie	N		5/19/92	13:05	0.73	26	3	5/20/92	14:50	0.84	26	3.4	281.6	100
1992	23-92	Gluskie	S		5/19/92	13:05	0.73	26	3	5/20/92	14:50	0.58	26	3.4	202.6	
1992	76-92	O'Ne-eil	N		5/19/92	12:00	0.44	23	3.1	5/20/92	12:00	0.37	23	3.8	135.4	100

year	sample	S c o o a	H e t a	D I P a	D I P a	A g r a	B l e l	D i os i	B i b a	B o m a	C e r a	C e r l	F or s i	C h a a	C h a s s a	C h i a	C h i p	C h i l s i	A b l s i	C a l l	P h o a	C e c a
1991	99-91																		10			
1991	10-91																		20	36		
1991	98-91																		20			
1991	11-91																		2			
1991	03-91																		40			
1991	00-91																		10	2		
1991	19-91																		66	68		
1991	52-91																		220			
1991	24-91																		2	28		
1991	02-91																		20	22		
1992	57-92																		8			
1992	43-92																		8	116		
1992	74-92																		36			
1992	50-92																		8			
1992	50-92																		44	1388		
1992	54-92																		28			
1992	46-92																		4	14		
1992	73-92																		4	24		
1992	49-92																		20	100		
1992	44-92																		8	796		
1992	15-92																		96			
1992	5-92																		248			
1992	6-92																		2240	8		
1992	7-92																		3720			
1992	11-92																		1408			
1992	4-92																		1468			
1992	16-92																		3056			
1992	3-92																		2048			
1992	2-92																		2448			
1992	13-92																		428			
1992	10-92																		1528			
1992	1-92																		4	180		
1992	9-92																		1	377		
1992	17-92																		4	120		
1992	20-92																		12			
1992	77-92																		4	80		
1992	38-92																		100			
1992	79-92																		80			
1992	18-92																		424			
1992	88-92																		8	660		
1992	78-92																		80			
1992	86-92																		100			
1992	74-92																		24	104		
1992	01-92																		20	232		
1992	91-92																		92	92	8	
1992	96-92																		4	748		
1992	89-92																		504			
1992	97-92																		1564			
1992	85-92																		4	1456		
1992	98-92																		8	228		
1992	84-92																		20	64		
1992	99-92																		16	136		
1992	90-92																		16	92		
1992	23-92																		6			
1992	76-92																		8	12	4	764

year	sample	S i m l	C n e s a s l	P r o s s l	P r o s s l	T w i s s l	T a b l a	T a b l a	T a c a	T i p a	T i p p	T i p l	T i p s	P r i s	D i c s	G o n s	H e x s	S t r i	S y r a	E P H a	E P H a	E P H l	H e p a	H e p n	C i n s n	E p s n
1991	99-91																						2			
1991	10-91																						62			
1991	98-91																									
1991	11-91																									
1991	03-91																									
1991	00-91																									
1991	19-91																					2	2			
1991	52-91	6																				4		6		
1991	24-91																									
1991	02-91																					2				
1992	57-92																									
1992	43-92	24																					8			
1992	74-92	4																					4			
1992	50-92																									
1992	50-92	8																								
1992	54-92																						24			
1992	46-92																									
1992	73-92	24																								
1992	49-92																					40		8		
1992	44-92	4																						4		
1992	15-92	16																				24				
1992	5-92																									
1992	6-92	16																					24			
1992	7-92																									
1992	11-92	16																					16			
1992	4-92	8																					8			
1992	16-92																					6		8		
1992	3-92																						40			
1992	2-92	16																					8			
1992	13-92																									
1992	10-92	8																					8			
1992	1-92																						4			
1992	9-92																						1			
1992	17-92																						4			
1992	20-92																									
1992	77-92	44																					36			
1992	38-92																									
1992	79-92	12																					12			
1992	18-92	4																								
1992	88-92																									
1992	78-92																						4			
1992	86-92	32																								
1992	74-92	48																					52			
1992	01-92	12																					40		4	
1992	91-92	32																					48			
1992	96-92	56																								
1992	89-92	48																				24		12		
1992	97-92	4																					12			
1992	85-92	8																					4			
1992	98-92	8																					60			
1992	84-92																									
1992	99-92	16																					8			
1992	90-92	80																					8		8	
1992	23-92																							2		
1992	76-92	8																					56		12	

year	sample	R h i s n	E p n	C a u s n	D r u s n	L e p n	S i p n	S i p n	A m e s n	B a e a	B a e n	B a e s n	H E M a	H E M n	C o r a	G i a a	C o r i	L y g i	M a c a	M e s a
1991	99-91																			
1991	10-91					2		4		10				2						
1991	98-91									4		12		4						
1991	11-91																			
1991	03-91										2		14							
1991	00-91												10							
1991	19-91										2		4							
1991	52-91									10		48				2				
1991	24-91																			
1991	02-91									10		12	24							
1992	57-92									4			32							
1992	43-92	20											56							
1992	74-92									8		76								
1992	50-92									8		4								
1992	50-92									20		16								
1992	54-92												64							
1992	46-92												36							
1992	73-92									4		52				4				
1992	49-92									8		8								
1992	44-92		4							28			32							
1992	15-92																			
1992	5-92																			
1992	6-92									6		16								
1992	7-92									32		384								
1992	11-92												288							
1992	4-92												112							
1992	16-92									44		8	42							
1992	3-92									24			16							
1992	2-92									24			88							
1992	13-92												8							
1992	10-92												16							
1992	1-92												24							
1992	9-92												15							
1992	17-92												24							
1992	20-92												20							
1992	77-92												112							
1992	38-92							8												
1992	79-92												56							
1992	18-92												20							
1992	88-92							44					60							
1992	78-92												8							
1992	86-92												104							
1992	74-92												232							
1992	01-92												48							
1992	91-92												40							
1992	96-92		4					4					56							
1992	89-92		8										140							
1992	97-92								12					32						
1992	85-92								16			16		2						
1992	98-92	16							8			8								
1992	84-92								8			16								
1992	99-92								8			60								
1992	90-92	16							24			72								
1992	23-92									6			68							
1992	76-92		8										16							

year	sample	S a l a a	H O M a a	H O M p a	A p h n	A p h n	P s y a	P s y n	C i c a	C i c a	C e a	C e a	H Y M a	H Y M a	B r a a	F o r a	E u l a	I c h a	M y m a	P l a a
1991	99-91																			
1991	10-91																	2		
1991	98-91																	4		
1991	11-91																			
1991	03-91																			
1991	00-91																			
1991	19-91																			
1991	52-91																2			
1991	24-91																			
1991	02-91																			
1992	57-92																			
1992	43-92																			
1992	74-92																			
1992	50-92																			
1992	50-92																			
1992	54-92																			
1992	46-92																			
1992	73-92																			
1992	49-92																			
1992	44-92																			
1992	15-92																			
1992	5-92																			
1992	6-92																			
1992	7-92																			
1992	11-92																			
1992	4-92																			
1992	16-92																4			
1992	3-92																			
1992	2-92																			
1992	13-92																			
1992	10-92																			
1992	1-92																			
1992	9-92																			
1992	17-92																			
1992	20-92																			
1992	77-92																			
1992	38-92																			
1992	79-92																			
1992	18-92																			
1992	88-92																			
1992	78-92																			
1992	86-92																			
1992	74-92															4		4		
1992	01-92															8				
1992	91-92																			
1992	96-92																	4		
1992	89-92															8				
1992	97-92																			
1992	85-92																			
1992	98-92															4				
1992	84-92																			
1992	99-92																			
1992	90-92																			
1992	23-92																			
1992	76-92															4				

year	sample	S c e a	L E P a	L E P I	A r c i	N e p i	P y r i	P L E a	P L E n	C a p a	P e r s a	N e m n	N e m l	P o d n	Z a p s n	M a i s n	C h i n	K a t s n	U r a s n	A l i s n	P a r s n
1991	99-91										112					2					
1991	10-91										2	64				42					
1991	98-91										32										
1991	11-91										2	14						2			
1991	03-91										4							2			
1991	00-91										2	50						2			
1991	19-91										62				22						
1991	52-91										182				14						
1991	24-91										18										
1991	02-91																				
1992	57-92										4				4			16			
1992	43-92										24						8	40			
1992	74-92														12		12				
1992	50-92																8			4	
1992	50-92										152							112			
1992	54-92																	12			
1992	46-92										4							4			
1992	73-92										8	8									
1992	49-92											8									
1992	44-92																24				
1992	15-92											8						8			
1992	5-92																				
1992	6-92											16						8			
1992	7-92										40										
1992	11-92											32									
1992	4-92											32									
1992	16-92										113										
1992	3-92											32									
1992	2-92										24										
1992	13-92																				
1992	10-92										24										
1992	1-92																				
1992	9-92										2										
1992	17-92																12				
1992	20-92																4				
1992	77-92																16				
1992	38-92																				
1992	79-92										4	4						16			
1992	18-92										21							20			
1992	88-92											16									
1992	78-92										8				8			20			
1992	86-92										4							8			
1992	74-92																	52			
1992	01-92										12	4			8	8					
1992	91-92											40						20			
1992	96-92										16							16			
1992	89-92														4			28			
1992	97-92																	8			
1992	85-92										28				28			28			
1992	98-92										4				48			20			
1992	84-92																				
1992	99-92										4										
1992	90-92														8	8		32		8	
1992	23-92										36										
1992	76-92										12				64						

year	sample	S w e s s	H a s s	S u n	L e n	I s o	P e n	P e n	T a e	P s s	P o o	O R T	N E U	H e m i	S i a	T H Y	T H Y	P h l	P h l	T h r	T R I	T R I
1991	99-91																					
1991	10-91																126					
1991	98-91																					
1991	11-91																2					
1991	03-91																4	2				
1991	00-91																					
1991	19-91																					
1991	52-91																					
1991	24-91																2					
1991	02-91																		2			
1992	57-92																					
1992	43-92																8					
1992	74-92																4	8				
1992	50-92																					
1992	50-92																					
1992	54-92																8					
1992	46-92																					
1992	73-92																					
1992	49-92																8					
1992	44-92																12	4				
1992	15-92																					
1992	5-92																			24		
1992	6-92																			8		
1992	7-92																			8		
1992	11-92																			48		
1992	4-92																					
1992	16-92																			20		
1992	3-92																			24		
1992	2-92																					
1992	13-92																					
1992	10-92																8					
1992	1-92																			4		
1992	9-92																					
1992	17-92																		4	4		
1992	20-92																			12		
1992	77-92																8			4		
1992	38-92																					
1992	79-92																			4		
1992	18-92																					
1992	88-92																			16		
1992	78-92																12			4		
1992	86-92																			8		
1992	74-92																					
1992	01-92																16		8	4	8	
1992	91-92																32					
1992	96-92																		4			
1992	89-92																			12		
1992	97-92																12					
1992	85-92																			12	24	
1992	98-92																			32		
1992	84-92																					
1992	99-92																			28		
1992	90-92																				8	
1992	23-92																		2	2		
1992	76-92																					

year	sample	G o o s s	G i o s s	A n a s s	H e y d l	H e y d l	H i m l	C h y s	E c c	H o m s	C l e s	H e s s	H y d s	L e p i	L e p s s	M o l n	P o l i	P h r i	P t i s p	S e r i	R h y a	R h y l	R h y s i	H i m s i	P s y j	M E G
1991	99-91																									
1991	10-91																									
1991	98-91																									
1991	11-91																									
1991	03-91																									
1991	00-91																									
1991	19-91																									
1991	52-91																									
1991	24-91																									
1991	02-91																									
1992	57-92																									
1992	43-92																									
1992	74-92																									
1992	50-92																									
1992	50-92																									
1992	54-92																									
1992	46-92																									
1992	73-92																									
1992	49-92																									
1992	44-92																									
1992	15-92																	8								
1992	5-92																	48								
1992	6-92																									
1992	7-92																	8								
1992	11-92																									
1992	4-92																									
1992	16-92																									
1992	3-92																	8								
1992	2-92																	8								
1992	13-92																									
1992	10-92																	8								
1992	1-92																									
1992	9-92																									
1992	17-92																									
1992	20-92																	4								
1992	77-92																	8								
1992	38-92																									
1992	79-92																									
1992	18-92																	12								
1992	88-92																	4								
1992	78-92																									
1992	86-92	4							8		4															
1992	74-92																									
1992	01-92																	16								
1992	91-92																									
1992	96-92																									
1992	89-92																									
1992	97-92																									
1992	85-92																	16								
1992	98-92																									
1992	84-92																									
1992	99-92																									
1992	90-92																		8							
1992	23-92																									
1992	76-92																									
																		36								

year	sample	Z Y G	I S O	M A L	I S a	I S n	I S p	I S I	A A a	A C a	N E M	N E M	O L I	P i s	G A S	B I V	D a p	D o t	L o t	T p	D d
1991	99-91																			132	1.91
1991	10-91							2						66						544	2.84
1991	98-91													100						196	1.15
1991	11-91													38						70	0.65
1991	03-91													2						84	0.86
1991	00-91								48					94						220	2.75
1991	19-91	2		4				4	2					62						304	2.13
1991	52-91		2						4					414						944	6.62
1991	24-91													24						74	0.91
1991	02-91									4				38						146	1.81
1992	57-92																			76	0.38
1992	43-92																			300	1.70
1992	74-92							4												200	0.95
1992	50-92																			32	0.14
1992	50-92																			1776	7.81
1992	54-92													4						148	1.08
1992	46-92																			66	0.41
1992	73-92																			132	1.41
1992	49-92													4						220	2.45
1992	44-92			8																936	12.73
1992	15-92																			180	0.67
1992	5-92						8													376	1.15
1992	6-92													8						2342	8.49
1992	7-92																			4240	17.63
1992	11-92																			1808	7.48
1992	4-92																			1692	9.69
1992	16-92							4												3370	19.30
1992	3-92																			2192	11.26
1992	2-92																			2640	14.55
1992	13-92																			436	3.11
1992	10-92																			1632	12.83
1992	1-92			4																224	1.99
1992	9-92																			401	4.64
1992	17-92			4																180	1.61
1992	20-92																			60	0.21
1992	77-92														4					332	1.05
1992	38-92																			8	0.04
1992	79-92								8					8						240	1.01
1992	18-92																			157	0.77
1992	88-92								4					12	4					608	2.52
1992	78-92																			764	3.41
1992	86-92														4					304	1.16
1992	74-92													8				8		576	2.10
1992	01-92	4	32						12	8	8	8	12							496	2.40
1992	91-92													4						472	2.26
1992	96-92													4						288	1.46
1992	89-92			24					4	4				8	4					1176	4.66
1992	97-92																			608	3.30
1992	85-92							4						4				8		1830	9.58
1992	98-92			40						4				4	4					1848	8.19
1992	84-92																			108	0.80
1992	99-92													4						360	2.62
1992	90-92													8						528	1.88
1992	23-92																			216	1.07
1992	76-92																4			1068	7.89

year	sample	Creek	Site		Date Set mmddyy	Time Set h:m	Velocity Set m·s⁻¹	Water Depth cm	Water Temp. °C	Date Collected mmddyy	Time Collected h:m	Velocity Collected m·s⁻¹	Water Depth cm	Water Temp. °C	Volume Sampled m³	Aperture Set %
			North	South												
1992	19-92	O'Ne-eil	S	S	5/19/92	12:10	0.58	39	3.1	5/20/92	12:10	0.53	39	3.8	185.6	100
1992	00-92	Forfar	N	N	5/29/92	16:15	0.63	32	5.2	5/30/92	16:00	0.6	32	5.2	203.5	100
1992	81-92	Forfar	S	S	5/29/92	16:15	0.76	33	5.2	5/30/92	16:00	0.71	33	5.2	243.2	100
1992	91-92	Gluskie	S	S	5/29/92	17:05	0.31	27	4.5	5/30/92	17:15	0.35	28	5.4	104.4	100
1992	76-92	Gluskie	N	N	5/29/92	17:10	0.46	25	4.5	5/30/92	17:10	0.48	26	5.4	122.9	100
1992	47-92	Bivouac	S	S	5/30/92	14:30	0.62	30	5.2	5/31/92	16:00	0.78	40	5.2	248.7	100
1992	75-92	Bivouac	N	N	5/30/92	14:30	0.92	52	5.2	5/31/92	16:00	1.08	55	5.2	355.3	100
1992	89-92	Forfar	S	S	5/30/92	16:00	0.71	34	5	5/31/92	16:15	1.29	68	4.5	337.9	100
1992	45-92	Gluskie	S	S	5/30/92	17:15	0.35	28	5.4	5/31/92	16:45	1.09	55	4.2	252.8	
1992	21-92	O'Ne-eil	N	N	5/30/92	12:15	1.03	45	4.2	5/31/92	15:20	1.72	50	4.2	450.2	100
1992	92-92	O'Ne-eil	S	S	5/30/92	12:15	1.58	30	4.2	5/31/92	15:20	1.01	38	4.2	488.6	100
1992	83-92	Bivouac	N	N	5/31/92	16:00	1.08	55	5.2	6/1/92	12:05	1.1	68	5.1	304.9	100
1992	93-92	Bivouac	S	S	5/31/92	16:00	0.78	40	5.2	6/1/92	12:05	0.89	43	5.1	233.6	100
1992	94-92	O'Ne-eil	S	S	5/31/92	15:40	0.55	28	4.2	6/1/92	11:00	1.25	70	3.9	260.2	100
1992	77-92	Forfar	N	N	6/9/92	11:35	0.62		5	6/10/92	11:00	0.62		4.8	202.3	100
1992	88-92	O'Ne-eil	S	S	6/9/92	10:10	0.8		5.6	6/10/92	9:45	0.8		5	262.8	100
1992	48-92	O'Ne-eil	N	N	6/9/92	10:15	0.82		5.6	6/10/92	9:45	0.82		5	268.5	100
1992	71-92	Forfar	S	S	6/10/92	11:15	0.64		5.4	6/11/92	10:30	0.64		5.4	207.3	100
1992	80-92	Forfar	N	N	6/10/92	11:20	0.62		5.4	6/11/92	10:40	0.62		5.4	201.5	100
1992	81-92	O'Ne-eil	S	S	6/10/92	10:15	0.8		5.2	6/11/92	11:00	0.8		6	248.3	100
1992	83-92	O'Ne-eil	N	N	6/10/92	10:20	0.82		5.2	6/11/92	11:00	0.82		6	239.5	100
1992	86-92	Bivouac	S	S	6/12/92	14:40	1.12			6/13/92	14:40	0.88			334.4	100
1992	79-92	Bivouac	N	N	6/12/92	14:45	1.17			6/13/92	14:45	0.98			359.4	100
1992	47-92	Gluskie	N	N	6/12/92	13:30	0.61		6.7	6/13/92	13:40	0.62		7.5	186.4	100
1992	51-92	Gluskie	N	N	6/12/92	13:30	0.61		6.7	6/13/92	13:40	0.62		7.5	207.1	100
1992	85-92	Gluskie	S	S	6/12/92	13:45	0.52		6.7	6/13/92	13:45	0.53		7.5	168.2	100
1992	46-92	Bivouac	S	S	6/13/92	14:55	0.88			6/14/92	14:55	1.05			321.6	100
1992	72-92	Bivouac	N	N	6/13/92	15:00	0.98			6/14/92	15:00	0.92			317.6	100
1992	53-92	Forfar	S	S	6/15/92	13:15	0.88		6.8	6/16/92	14:20	0.73		7	281.3	100
1992	45-92	Forfar	N	N	6/15/92	13:20	0.9		6.8	6/16/92	13:00	0.73		7	268.8	100
1992	50-92	Gluskie	S	S	6/15/92	14:30	0.53		8	6/16/92	13:45	0.51		8.1	168.4	100
1992	52-92	O'Ne-eil	S	S	6/15/92	12:25	0.9		7.7	6/16/92	12:00	0.86		7.9	289.1	100
1992	49-92	O'Ne-eil	N	N	6/15/92	12:35	0.86		7.7	6/16/92	12:10	0.8		7.9	272.7	100
1992	78-92	Forfar	N	N	6/16/92	13:15	0.68		6.8	6/17/92	14:30	0.63		7	230.4	100
1992	41-92	Gluskie	N	N	6/16/92	13:55	0.44		8	6/17/92	15:10	0.48		8.1	161.8	100
1992	75-92	O'Ne-eil	N	N	6/16/92	12:20	0.88		7.9	6/16/92	13:15	0.74		7.9	270.8	100
1992	57-92	O'Ne-eil	S	S	6/16/92	12:20	0.88		7.9	6/17/92	13:05	0.87		7.9	301.7	100
1992	87-92	Forfar	N	N	6/17/92	14:40	0.66		6.8	6/18/92	14:00	0.6		7	207.8	100
1992	72-92	Gluskie	N	N	6/17/92	15:00	0.4		8	6/18/93	15:00	0.34		8.1	123.7	100
1992	60-92	Gluskie	S	S	6/17/92	15:30	0.33		8	6/18/92	14:45	0.33		8.1	106.9	100
1992	06-92	Bivouac	S	S	6/26/92	15:45	0.5		13	6/27/92	16:15	0.42		13	157	100
1992	44-92	Bivouac	N	N	6/26/92	15:45	0.46		13	6/27/92	16:15	0.34		13	136.5	100
1992	80-92	Bivouac	S	S	6/27/92	16:50	0.46		13	6/28/92	16:40	0.42		13	147.1	100
1992	40-92	Bivouac	N	N	6/27/92	16:50	0.38		13	6/28/92	16:40	0.36		13	122.8	100
1992	70-92	Forfar	N	N	6/27/92	15:40	0.58		11	6/28/92	15:10	0.55		11	185	100
1992	90-92	Forfar	S	S	6/27/92	15:40	0.56		11	6/28/92	15:10	0.5		11	173.5	100
1992	55-92	Forfar	S	S	6/28/92	15:20	0.6		12	6/29/92	15:20	0.53		12	188.9	100
1992	08-92	Forfar	N	N	6/28/92	15:20	0.62		12	6/29/92	15:20	0.53		12	192.3	100
1992	61-92	Gluskie	N	N	6/28/92	17:15	0.61		12	6/29/92	17:00	0.61		12	201.8	100
1992	63-92	Gluskie	S	S	6/28/92	17:15	0.69		12	6/29/92	17:00	0.68		12	170	100
1992	40-92	O'Ne-eil	N	N	6/28/92	13:45	0.55		13	6/29/92	13:45	0.44		13	165.5	100
1992	52-92	O'Ne-eil	S	S	6/28/92	13:45	0.65		13	6/29/92	13:45	0.65		13	217.3	100
1992	95-92	Gluskie	S	S	6/29/92	17:15	0.73		12	6/30/92	17:15	0.55		12	214	100
1992	45-92	Gluskie	N	N	6/29/92	17:15	0.59		12	6/30/92	17:15	0.63		12	204	100
1992	21-92	O'Ne-eil	S	S	6/29/92	13:55	0.68		12	6/30/92	13:55	0.68		12	227.4	100

year	sample	S co o r y	H e t a a	D I P a a	D I P a a	A g r a a	B i l e s i	D i o s i	B i b a	B o m a	C e r a	C e r i	F o r s i	C h a a	C h a s a	C h i a	C h i p	C h i l	A b l s i	C a l i	P h o s	C e c a		
1992	19-92																		464					
1992	00-92																		732			12		
1992	81-92																		8	452				
1992	91-92																			116				
1992	76-92																			1432				
1992	47-92																			32				
1992	75-92																		24	218				
1992	89-92																		8	1787			12	
1992	45-92																			156				
1992	21-92																			36				
1992	92-92																		4	48				
1992	83-92																		8	278				
1992	93-92																			48				
1992	94-92																			80				
1992	77-92																			160			8	
1992	88-92																			528				
1992	48-92																			48				
1992	71-92																			112				
1992	80-92																		8	128			4	
1992	81-92																			60				
1992	83-92																			1986	16			
1992	86-92																							
1992	79-92	8																	364	540	694			
1992	47-92																			320				
1992	51-92																			304	16			
1992	85-92																							
1992	46-92																		12	4	8	88		
1992	72-92																		4			12		
1992	53-92																			272				
1992	45-92																			448				
1992	50-92																		24	336				
1992	52-92																			384				
1992	49-92																			320				
1992	78-92																						4	
1992	41-92																			96				
1992	75-92																			140				
1992	57-92																			1488				
1992	87-92																			364				
1992	72-92																		40	212				
1992	60-92																		28	20	500			
1992	06-92																		20	128				
1992	44-92																		4		92			
1992	80-92																			424				
1992	40-92																			92				
1992	70-92																			54	1124			4
1992	90-92																		24	52	996			
1992	55-92																		20	48	1016		4	
1992	08-92																			624				
1992	61-92																		1336		52			
1992	63-92																		8	464				
1992	40-92																			56				
1992	52-92																			80	416			
1992	95-92																		12	16	268			
1992	45-92																		28	468				
1992	21-92																			256				

year	sample	Cult	Cu	D	D	D	D	E	E	M	M	M	M	P	P	P	P	S	S	S
		u	u	e	e	i	x	o	o	m	m	p	p	y	y	c	c	s	i	m
		I	I	eu	u	s	x	i	x	l	l	a	l	cc	cc	c	c	ci	ia	im
1992	19-92																			
1992	00-92																			4
1992	81-92																			4
1992	91-92																			4
1992	76-92																			8
1992	47-92																			4
1992	75-92																			
1992	89-92														4					12
1992	45-92															4				12
1992	21-92																			
1992	92-92																			
1992	83-92																			4
1992	93-92																			8
1992	94-92																			
1992	77-92																			4
1992	88-92																			16
1992	48-92																			
1992	71-92														16	16				
1992	80-92																			
1992	81-92																			16
1992	83-92																			20
1992	86-92																			
1992	79-92																			12
1992	47-92																			60
1992	51-92																			
1992	85-92																			
1992	46-92																			
1992	72-92																			8
1992	53-92																			8
1992	45-92																			
1992	50-92																			8
1992	52-92																			
1992	49-92																			
1992	78-92																			4
1992	41-92																			16
1992	75-92																			
1992	57-92																			48
1992	87-92																			
1992	72-92																			
1992	44-92																			
1992	80-92																			8
1992	40-92																			
1992	70-92																			4
1992	90-92																			4
1992	55-92																			4
1992	08-92																			8
1992	61-92																			
1992	63-92																			
1992	40-92																			8
1992	52-92																			
1992	95-92																			
1992	45-92																			12
1992	21-92																			

year	sample	G o o s s i	G l o s s i	A n a s s i	H y d e l p	H y d e l p	H y d e l p	L i m y s i	C h y s i	E c c s s i	H o m o s i	C l o s i	H e s s i	H y d e l p	L e p s p	M o l i n	P o l i l	P h r i p	P t i s p	S e r i a	R h y r y l	R h y s i	H i m s i	P s y l	M E G			
1992	19-92																											
1992	00-92														20													
1992	81-92																											
1992	91-92													4														
1992	76-92																											
1992	47-92														8													
1992	75-92														16	16												
1992	89-92														48													
1992	45-92																											
1992	21-92																											
1992	92-92													4														
1992	83-92	4												24														
1992	93-92																											
1992	94-92															8												
1992	77-92														8													
1992	88-92	8													8													
1992	48-92																											
1992	71-92																											
1992	80-92														12													
1992	81-92														4													
1992	83-92														16													
1992	86-92																											
1992	79-92														8												72	
1992	47-92														80												16	
1992	51-92														30													
1992	85-92																											
1992	46-92														8													
1992	72-92														4													
1992	53-92														8													
1992	45-92														32													
1992	50-92																	16										
1992	52-92																										32	
1992	49-92														32	32												
1992	78-92														28													
1992	41-92														16	48	16											
1992	75-92																											
1992	57-92																										16	
1992	87-92																											
1992	72-92															8												
1992	60-92																		24									
1992	06-92														4		20										48	
1992	44-92															8											4	
1992	80-92																	44										
1992	40-92															4												
1992	70-92																	20		32							4	
1992	90-92														4	24											4	
1992	55-92	4														28											4	
1992	08-92															16	16											
1992	61-92																											
1992	63-92															12		4										
1992	40-92																											
1992	52-92																	32									16	
1992	95-92																4										4	
1992	45-92																										28	
1992	21-92																											

year	sample	Z Y G	I S O	M A L	I N a	I N n	I N p	I N I	A R e	A C a	N E M	N E M	O L I	P i s	G A S	B I V	D a p a	O S T	D I P	L o t a	T p	D d		
1992	19-92																					568	3.06	
1992	00-92							8	4			8	4									915	4.50	
1992	81-92												20									528	2.17	
1992	91-92												4									272	2.61	
1992	76-92											8		4								1720	14.00	
1992	47-92													4								104	0.42	
1992	75-92																					394	1.11	
1992	89-92			4				24		8		72	12									2355	6.97	
1992	45-92			48						4	20	4					4					852	3.37	
1992	21-92																					44	0.10	
1992	92-92					8				4				8				8				136	0.28	
1992	83-92					32		4	4					4	84	4		95				789	2.59	
1992	93-92																					8	0.03	
1992	94-92																					60	0.23	
1992	77-92									4				12								240	1.19	
1992	88-92			8						4				4								389	1.48	
1992	48-92			16									32									690	2.57	
1992	71-92																					144	0.69	
1992	80-92																					384	1.91	
1992	81-92							8	4													308	1.24	
1992	83-92							4							4	4						3610	15.07	
1992	86-92															4							96	0.29
1992	79-92								8	40	196					4	4						3136	8.73
1992	47-92					16	16						32		16								820	4.40
1992	51-92																					558	2.69	
1992	85-92															16							160	0.95
1992	46-92																					392	1.22	
1992	72-92									4												184	0.58	
1992	53-92									8												528	1.88	
1992	45-92									64												992	3.69	
1992	50-92																8					888	5.27	
1992	52-92			96				32														896	3.10	
1992	49-92																					640	2.35	
1992	78-92									8				12		4						277	1.20	
1992	41-92									32												352	2.18	
1992	75-92															4	4					160	0.59	
1992	57-92									16			16									2352	7.80	
1992	87-92														20	23							859	4.13
1992	72-92																8						512	4.14
1992	60-92														4	16	4	24					950	8.89
1992	06-92																					1010	10.23	
1992	44-92																						1606	1.67
1992	80-92															8							920	6.25
1992	40-92																						344	2.80
1992	70-92									4	12			16		84							2210	11.95
1992	90-92									4	32			12		40							1974	11.38
1992	55-92					4	24			40	4		16	132	4							1984	10.50	
1992	08-92																38						982	5.11
1992	61-92																64						1928	9.55
1992	63-92								1	12				4	124			188					1105	6.50
1992	40-92									32						8							256	1.55
1992	52-92																8						744	3.42
1992	95-92															205							1125	5.26
1992	45-92							32	24			4	44	4		100							1504	7.37
1992	21-92																32						608	2.67

year	sample	Creek	Site		Date Set mmddyy	Time Set h:m	Velocity Set m·s⁻¹	Water Depth cm	Water Temp. °C	Date Collected mmddyy	Time Collected h:m	Velocity Collected m·s⁻¹	Water Depth cm	Water Temp. °C	Volume Sampled m³	Aperture Set %
			North	South												
1992	62-92	O'Ne-eil	N	S	6/29/92	13:55	0.55	12	12	6/30/92	13:55	0.53	12	12	180.6	100
1992	19-92	Forfar	S	S	7/11/92	12:30	0.43	17	11	7/12/92	12:30	0.45	16	11	147.1	100
1992	39-92	Forfar	N	S	7/11/92	12:30	0.43	20	11	7/12/92	12:30	0.45	22	11	147.1	100
1992	92-92	O'Ne-eil	S	S	7/11/92	13:15	0.22	34	14	7/12/92	13:15	0.23	34	14	75.2	100
1992	58-92	O'Ne-eil	N	S	7/11/92	13:15	0.2	21	14	7/12/92	13:15	0.23	21	14	71.9	100
1992	71-92	Bivouac	N	S	7/12/92	14:15	0.34	17	12	7/13/92	15:20	0.35	17	12	120.5	70
1992	35-92	Bivouac	S	S	7/12/92	15:30	0.19	19	12	7/13/92	15:20	0.18	20	12	61.4	90
1992	05-92	Gluskie	S	S	7/12/92	14:15	0.33	26	11	7/13/92	14:15	0.35	29	11	113.7	100
1992	48-92	Gluskie	N	S	7/12/92	14:15	0.34	22	11	7/13/92	14:15	0.35	24	11	115.4	100
1992	51-92	Forfar	N	S	7/21/92	10:45	0.29	11	11	7/22/92	10:55	0.31	11	11	101	100
1992	30-92	Forfar	S	S	7/21/92	10:45	0.31	11	11	7/22/92	10:55	0.26	11	96	100	
1992	20-92	Gluskie	S	S	7/21/92	12:00	0.2	12	12	7/22/92	11:50	0.2	12	66.4	100	
1992	32-92	Gluskie	N	S	7/21/92	12:00	0.19	12	12	7/22/92	11:50	0.16	12	57.9	100	
1992	09-92	O'Ne-eil	S	S	7/21/92	10:00	0.27	11	11	7/22/92	9:30	0.28	11	90	100	
1992	33-92	O'Ne-eil	N	S	7/21/92	10:00	0.26	11	11	7/22/92	9:30	0.25	11	83.5	100	
1992	63-92	Forfar	S	S	7/22/92	11:10	0.25	11	11	7/23/92	10:30	0.26	11	82.9	100	
1992	01-92	Forfar	N	S	7/22/92	11:10	0.34	11	11	7/23/92	10:45	0.31	11	101.8	100	
1992	65-92	Gluskie	S	S	7/22/92	11:50	0.2	12	12	7/23/92	11:40	0.18	12	63.1	100	
1992	73-92	Gluskie	N	S	7/22/92	12:00	0.17	12	12	7/23/92	11:35	0.15	12	52.9	100	
1992	03-92	O'Ne-eil	N	S	7/22/92	9:45	0.27	11	11	7/23/92	9:40	0.26	11	88.3	100	
1992	36-92	O'Ne-eil	S	S	7/22/92	9:45	0.28	11	11	7/23/92	9:40	0.22	11	86.6	100	
1992	34-92	Bivouac	S	S	7/23/92	12:20	0.18			7/24/92	12:55	0.16		29.1	50	
1992	36-92	Bivouac	N	S	7/23/92	12:30	0.25			7/24/92	12:55	0.22		52	65	
1992	42-92	Bivouac	N	S	7/24/92	13:00	0.19			7/25/92	13:30	0.19		42.2	65	
1992	30-92	Bivouac	S	S	7/24/92	13:00	0.2			7/25/92	13:30	0.2		34.2	30	
1992	95-92	Forfar	S	S	7/26/92	11:00	0.09	11	11	7/27/92	11:20	0.09	11	30.5	100	
1992	37-92	Forfar	N	S	7/26/92	11:00	0.1	11	11	7/27/92	11:20	0.16	11	44.1	100	
1992	70-92	Gluskie	S	S	7/26/92	8:50	0.18	10	10	7/27/92	8:30	0.21	10	64.1	100	
1992	38-92	Gluskie	N	S	7/26/92	9:00	0.06	10	10	7/27/92	8:35	0.09	10	24.6	100	
1992	41-92	O'Ne-eil	S	S	7/26/92	10:15	0.19	11	11	7/27/92	10:30	0.22	11	66.4	100	
1992	64-92	O'Ne-eil	N	S	7/26/92	10:15	0.17	11	11	7/27/92	10:00	0.23	11	67.6	100	
1992	53-92	Forfar	S	S	7/27/92	11:30	0.1	10	10	7/28/92	11:30	0.02	11	16.1	100	
1992	26-92	Forfar	N	S	7/27/92	11:30	0.17	10	10	7/28/92	11:30	0.2	11	61.9	100	
1992	65-92	Gluskie	N	S	7/27/92	8:50	0.1	10	10	7/28/92	8:35	0.13	10	38.1	100	
1992	61-92	Gluskie	S	S	7/27/92	8:50	0.18	10	10	7/28/92	8:35	0.21	10	64.5	100	
1992	42-92	O'Ne-eil	N	S	7/27/92	10:40	0.2	11	11	7/28/92	12:10	0.17	12	66.2	100	
1992	27-92	O'Ne-eil	S	S	7/28/92	10:40	0.21	11	11	7/28/92	12:10	0.18	12	69.3	100	
1992	25-92	Forfar	N	S	8/3/92	11:20	0.19	14	12	8/4/92	11:20	0.24	14	13	71.9	100
1992	28-92	Forfar	S	S	8/3/92	11:20	0.18	14	12	8/4/92	11:20	0.14	14	13	53.5	70
1992	14-92	Gluskie	N	S	8/3/92	12:00	0.19	17	13	8/4/92	12:10	0.21	18	14	64	90
1992	31-92	Gluskie	S	S	8/3/92	12:00	0.14	12	13	8/4/92	12:10	0.11	13	14	18.8	40
1992	24-92	O'Ne-eil	S	S	8/3/92	10:30	0.08	33	13	8/4/92	10:20	0.08	33	13	26.6	100
1992	69-92	O'Ne-eil	N	S	8/3/92	10:30	0.05	26	13	8/4/92	10:20	0.05	23	13	16.7	
1992	27-92	Bivouac	N	S	8/5/92	17:00	0.34	5		8/6/92	16:12	0.38	6		116.6	10
1992	02-92	Bivouac	S	S	8/5/92	17:00	0.07	14		8/6/92	16:12	0.17	16		17.5	40
1992	16-92	Bivouac	S	S	8/19/92	11:30	0.17	9.5	9.2	8/20/92	11:30	0.16	9.3	9.2	55.2	100
1992	02-92	Bivouac	N	S	8/19/92	11:30	0.13	8.5	9.2	8/20/92	11:30	0.14	8	9.2	45.1	100
1992	17-92	Gluskie	N	S	8/19/92	13:10	0.65	10	13	8/20/92	13:15	0.68	10	12	223.1	100
1992	68-92	Gluskie	S	S	8/19/92	13:10	0.54	12	13	8/20/92	13:15	0.56	11	13	184.5	100
1992	13-92	Bivouac	N	S	8/20/92	11:30	0.14	9.3	9.3	8/21/92	11:30	0.14	9	9.3	46.8	100
1992	67-92	Bivouac	S	S	8/20/92	11:30	0.16	8	9.3	8/21/92	11:30	0.16	8	9.3	53.5	100
1992	29-92	Gluskie	N	S	8/20/92	13:15	0.68	10	12	8/21/92	13:13	0.68	10	12	227.4	100
1992	55-92	Gluskie	S	S	8/20/92	13:15	0.56	11	12	8/21/92	13:12	0.56	11	12	187.2	100
1992	15-92	Forfar	N	S	8/22/92	11:15	0.46	15	7.7	8/23/92	11:20	0.46	15	7.3	154.3	100
1992	22-92	Forfar	S	S	8/22/92	11:15	0.6	15	7.7	8/23/92	11:10	0.6	15	7.3	200	100

year	sample	S c e a	L E P p	L E P i	A r c i	N e p i	P y r i	P L E a	P L E n	P L E i	C a p a	P a r s a	N e m n	N e m l	P o d s n	Z e p s n	M a l s n	C h i n	K a t s n	U r a s n	A l l s n	P a r s n		
1992	62-92										12									12				
1992	19-92																			8				
1992	39-92										4	4			4					32				
1992	92-92																			8				
1992	58-92											8												
1992	71-92																			20				
1992	35-92																			20				
1992	05-92										8									20				
1992	48-92											12												
1992	51-92																							
1992	30-92																							
1992	20-92																			8				
1992	32-92																							
1992	09-92										12									8				
1992	33-92	4																		48				
1992	63-92											8												
1992	01-92											8								20				
1992	65-92																							
1992	73-92											6												
1992	03-92																			4				
1992	36-92																			20				
1992	34-92																			17				
1992	36-92											12												
1992	42-92											12												
1992	30-92											40								4				
1992	95-92												32											
1992	37-92																				8			
1992	70-92																							
1992	38-92												8		12	4								
1992	41-92												8							16				
1992	64-92												28											
1992	53-92												4											
1992	26-92												8											
1992	65-92																							
1992	61-92												20							4				
1992	42-92	4												8										
1992	27-92												16							12				
1992	25-92												20							20				
1992	28-92												76											
1992	14-92													8										
1992	31-92													8										
1992	24-92												16							16				
1992	69-92													4										
1992	27-92																							
1992	02-92													12						4				
1992	16-92													4						12				
1992	02-92																			4				
1992	17-92																			12				
1992	68-92												10											
1992	13-92													12						25				
1992	67-92																							
1992	29-92																			40				
1992	55-92													1	1									
1992	15-92																							
1992	22-92																			1				

year	sample	Creek	Site															
			North		South		Date Set	Time Set	Velocity Set	Water Depth	Water Temp.	Date Collected	Time Collected	Velocity Collected	Water Depth	Water Temp.	Volume Sampled	Aperture Set
					mmddyy	h:m	m·s⁻¹	cm	°C	mmddyy	h:m	m·s⁻¹	cm	°C	m³	%		
1992	18-92	O'Ne-il	N		8/22/92	10:15	0.48	13	8.9	8/23/92	10:15	0.42	13	8.5	153.8	100		
1992	28-92	O'Ne-il	S		8/22/92	10:15	0.55	13	8.9	8/23/92	10:15	0.6	13	8.5	192.3	100		
1992	12-92	Forfar	S		8/23/92	11:15	0.6	15	7.3	8/24/92	11:20	0.55	15	8.2	179.2	75		
1992	59-92	Forfar	N		8/23/92	11:30	0.46	15	7.3	8/24/92	12:00	0.46	15	8.2	153.6	100		
1992	23-92	O'Ne-il	S		8/23/92	10:15	0.55	13	8.5	8/24/92	10:15	0.6	13	8.9	192.3	100		
1992	56-92	O'Ne-il	N		8/23/92	10:15	0.42	13	8.5	8/24/92	10:15	0.42	12	8.9	140.4	100		
1992	66-92	Bivouac	S		9/1/92	17:00	0.17	7.5	9.4	9/2/92	16:30	0.26	8	9.4	47.2	100		
1992	67-92	Bivouac	N		9/1/92	17:00	0.19	7.5	9.4	9/2/92	16:25	0.33	8	9.4	57	100		
1992	33-92	Forfar	S		9/1/92	15:20	0.19	12	11	9/2/92	14:30	0.16	12	11	56.5	100		
1992	68-92	Gluskie	S		9/1/92	16:35	0.56	13	11	9/2/92	15:45	0.54	12	11	135.9	100		
1992	04-92	Gluskie	N		9/1/92	16:35	0.35	13	11	9/2/92	15:40	0.43	13	11	122.9	100		
1992	32-92	O'Ne-il	N		9/1/92	14:30	0.36	8	11	9/2/92	13:00	0.2	8	11	58.8	100		
1992	26-92	O'Ne-il	S		9/1/92	14:30	0.48	9	11	9/2/92	13:10	0.3	8	11	82.5	66		
1992	98-92	Bivouac	S		9/2/92	16:35	0.23	8	9	9/3/92	14:55	0.15	8	9	39.6	100		
1992	11-92	Bivouac	N		9/2/92	16:35	0.31	8	9	9/3/92	14:45	0.25	7.5	9	57.9	100		
1992	35-92	Forfar	N		9/2/92	14:20	0.26	12	9.4	9/3/92	14:00	0.21	12	9	56.5	75		
1992	96-92	Forfar	S		9/2/92	14:40	0.09	12	9.4	9/3/92	12:50	0.12	12	10	34.7	100		
1992	54-92	Gluskie	S		9/2/92	15:40	0.52	12	10	9/3/92	14:15	0.46	13	9.7	157.3	100		
1992	99-92	Gluskie	N		9/2/92	15:55	0.43	15	10	9/3/92	12:00	0.27	15	9.7	101.3	100		
1992	34-92	O'Ne-il	N		9/2/92	13:25	0.27		10	9/3/92	11:40	0.34		8.6	60.5	100		
1992	31-92	O'Ne-il	S		9/2/92	13:25	0.36		10	9/3/92	11:55	0.41		8.6	80.9	66		
1992	04-92	Forfar	S		9/22/92	11:00	0.57		6.2	9/23/92	11:00	0.57		7.4	200.6	100		
1992	05-92	Forfar	N		9/22/92	11:00	0.58		6.2	9/23/92	11:00	0.58		7.4	193.9	100		
1992	60-92	Gluskie	S		9/22/92	16:15	0.8		6.9	9/24/92	17:00	0.8		7.8	275.9	100		
1992	00-92	O'Ne-il	N		9/22/92	14:00	0.54		7.3	9/23/92	15:00	0.45		8.2	172.4	100		
1992	93-92	O'Ne-il	N		9/22/92	14:00	0.54		7.3	9/23/93	15:05	0.45		8.2	173	100		
1992	64-92	O'Ne-il	S		9/22/92	16:00	0.48		7.3	9/23/92	15:00	0.46		8.2	150.6	100		
1992	59-92	Forfar	S		9/23/92	11:00	0.57		7.4	9/24/92	12:00	0.56		7.1	198.5	100		
1992	69-92	Forfar	N		9/23/92	11:00	0.58		7.4	9/24/92	12:00	0.58		7.1	202	100		
1992	97-92	Gluskie	N		9/23/92	17:00	0.7		7.8	9/24/92	17:42	0.7		7.3	120.7	100		
1992	58-92	Gluskie	S		9/23/92	17:00	1.14		7.8	9/24/92	17:42	1.14		7.3	196.5	100		
1992	56-92	O'Ne-il	S		9/23/92	16:00	0.5		8.2	9/24/92	16:45	0.5		7.3	171.2	100		
1992	62-92	O'Ne-il	S		9/23/92	16:00	0.5		8.2	9/24/92	16:45	0.5		7.3	171.2	100		
1992	07-92	O'Ne-il	N		9/23/92	16:00	0.5		8.2	9/24/92	16:35	0.45		7.3	171.2	100		
1992	10-92	O'Ne-il	N		9/23/92	16:00	0.5		8.2	9/24/92	16:35	0.45		7.3	171.2	100		
1992	03-92	Bivouac	S		9/29/92	15:10	0.38			9/30/92	15:55	0.38			131	100		
1992	25-92	Bivouac	S		9/29/92	15:10	0.4			9/30/92	15:55	0.4			137.9	100		
1992	24-92	Bivouac	S		9/29/92	15:10	0.38			9/30/92	15:55	0.38			131	100		
1992	29-92	Bivouac	N		9/30/92	15:10	0.33			9/30/92	15:55	0.33			108.1	90		
1992	39-92	Bivouac	N		9/30/92	15:10	0.39			9/30/92	15:55	0.39			108.1	90		
1993	67-93	Forfar	S		4/17/93	15:10	0.47	21	0.8	4/18/93	15:00	0.47	19	1.2	156	100		
1993	60-93	O'Ne-il	S		4/17/93	12:20	0.62	19	1.3	4/18/93	13:25	0.42	21	1.7	181.7	100		
1993	62-93	O'Ne-il	N		4/17/93	12:35	0.56	21	1.3	4/18/93	13:10	0.41	20	1.7	166.1	100		
1993	61-93	Bivouac	S		4/18/93	11:00	0.35	20	0.2	4/19/93	10:10	0.35	23	0.2	113	100		
1993	59-93	Bivouac	N		4/18/93	11:10	0.48	21	0.2	4/19/93	10:20	0.47	22	0.2	153.3	100		
1993	71-93	Forfar	S		4/18/93	15:00	0.47	19	1.1	4/19/93	15:40	0.34	20	1.1	139.2	100		
1993	70-93	Forfar	N		4/18/93	15:05	0.45	19	1.1	4/19/93	15:40	0.37	20	1.1	140.4	100		
1993	69-93	Gluskie	S		4/18/93	9:25	0.55	14	0.2	4/19/93	9:25	0.52	15	0.2	125.2	100		
1993	63-93	Gluskie	N		4/18/93	9:30	0.68	21	0.2	4/19/93	9:40	0.56	21	0.2	208.8	100		
1993	79-93	O'Ne-il	N		4/18/93	13:10	0.41	20	1.4	4/19/93	14:15	0.58	22	1.4	171.9	100		
1993	58-93	O'Ne-il	S		4/18/93	13:25	0.42	21	1.4	4/19/93	14:05	0.58	22	1.4	171.9	100		
1993	80-93	Bivouac	S		4/19/93	11:00	0.35	23	0.2	4/20/93	10:00	0.37	25	0.2	115.4	100		
1993	73-93	Bivouac	N		4/19/93	11:10	0.47	22	0.2	4/20/93	10:15	0.37	21	0.2	135.1	100		
1993	64-93	Gluskie	N		4/19/93	9:40	0.56	21	0.2	4/20/93	9:35	0.56	25	0.1	186.6	100		
1993	44-93	Bivouac	N		5/7/93	9:30	0.52	0.8	5/8/93	9:40	0.4	1.2	1.2	154.9	100			

year	sample	S c o o t a	H e t a	D I P a	D I P a	A g r a	B i l a	D i o s i	B i b a	B o m a	C e r a	C e r r l	F o r s i	C h a a	C h a s a	C h i a	C h i p	C h i l	A b i s i	C a l	P h o a	C e c a					
1992	18-92																4	8	40								
1992	28-92			20	20															52							
1992	12-92			40														100	84	28							
1992	59-92			36														140	4	28		20					
1992	23-92			16														8	12	92							
1992	56-92			4	8	4													16	24		8					
1992	66-92																			28							
1992	67-92			76																							
1992	33-92																										
1992	68-92			448		16	4										324	8		368	60	52		8	8		
1992	04-92			40	60													40				108					
1992	32-92			66	10																	16					
1992	26-92			40															20			20	104				
1992	98-92			4																	24						
1992	11-92																				36						
1992	35-92																				12						
1992	96-92																				44						
1992	54-92			66	1	2														158							
1992	99-92			24														4		40							
1992	34-92			32																							
1992	31-92			12	4													4			20		8				
1992	04-92																				140						
1992	05-92																		32		864						
1992	60-92																				616						
1992	00-92																										
1992	93-92																				108						
1992	64-92			4														8				144					
1992	59-92																				608						
1992	69-92			8																	224						
1992	97-92			44	8	4													40		88						
1992	58-92			12	12	4														432							
1992	56-92			4	4																16						
1992	62-92			8	320																						
1992	07-92																				68						
1992	10-92					4													4		31						
1992	03-92			4	8														8								
1992	25-92			16																	48						
1992	24-92																		40		4						
1992	29-92			8	8																48						
1992	39-92			16																	48						
1993	67-93																				32						
1993	60-93																	4			72						
1993	62-93																				236						
1993	61-93																				84						
1993	59-93																		12		140						
1993	71-93																				68						
1993	70-93																				260						
1993	69-93																		12		24						
1993	63-93			4															12		16						
1993	79-93																				148						
1993	58-93			4														4			16						
1993	80-93																				52						
1993	73-93			4																12	56						
1993	64-93			4														4			12						
1993	44-93																		8		472						

year	sample	R h i s n	E p n	C a u s n	D r u s n	L e p s n	L e p s n	S i p a	S i p n	A m e s n	B a e a	B a e n	B a s e n	H E M a	H E M n	C o r a	G l a a	C o r i	L y g i	M a c a	M e s a	
1992	18-92												4									
1992	28-92											4										
1992	12-92											4										
1992	59-92											4										
1992	23-92											4	4									
1992	56-92													24								
1992	66-92													20								
1992	67-92													8								
1992	33-92																					
1992	68-92													48								
1992	04-92													60								
1992	32-92											2			2		4					
1992	26-92											12										
1992	98-92											4										
1992	11-92													20								
1992	35-92											8			8							
1992	96-92											4			8							
1992	54-92											42			8							
1992	99-92														12							
1992	34-92														2							
1992	31-92											4			4	4						
1992	04-92											4										
1992	05-92											8										
1992	60-92																					
1992	00-92																					
1992	93-92																					
1992	64-92																					
1992	59-92												32									
1992	69-92												16									
1992	97-92													4	8		20					
1992	58-92														40							
1992	56-92											8		4			4					
1992	62-92											8			16							
1992	07-92														4							
1992	10-92															4						
1992	03-92												12									
1992	25-92											4										
1992	24-92																					
1992	29-92												4									
1992	39-92																					
1993	67-93		12									12			16							
1993	60-93											12			24							
1993	62-93											4										
1993	61-93											4										
1993	59-93																					
1993	71-93											4				8						
1993	70-93														16							
1993	69-93																					
1993	63-93														8							
1993	79-93											12			24							
1993	58-93		36									4			8							
1993	80-93																					
1993	73-93														12							
1993	64-93														4							
1993	44-93		4									4			40							

	G I o r year	G o s a n s s	A n a s s	H e d s	H e d s	L i m p	C h y s	E c c s	H o m s	C l o s	H e s s	H y d s	L e p	L e p s s	M o n	P o l	P h r i s p	P t i s p	S e r i	R h y a	R h y l	R h y s s	H i m s	P s s y	M E G
--	--------------------------	---------------------------------	-----------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	-------------	-----------------------	-------------	-------------	----------------------------	-----------------------	------------------	------------------	------------------	-----------------------	------------------	------------------	-------------

1992 18-92

1992 28-92

1992 12-92

1992 59-92

12

1992 23-92

1992 56-92

1992 66-92

1992 67-92

1992 33-92

1992 68-92

1992 04-92

1992 32-92

1992 26-92

1992 98-92

4

1992 11-92

1992 35-92

1992 96-92

1992 54-92

1

1992 99-92

1992 34-92

1992 31-92

1992 04-92

4 12

1992 05-92

1992 60-92

1992 00-92

8

1992 93-92

4

1992 64-92

1992 59-92

1992 69-92

8 8

8

1992 97-92

4

1992 58-92

1992 56-92

1992 62-92

1992 07-92

1992 10-92

1992 03-92

8

1992 25-92

4

1992 24-92

4

1992 29-92

4

1992 39-92

4

12

1993 67-93

4

8

1993 60-93

1993 62-93

1993 61-93 4

4

1993 59-93

8

1993 71-93

4

1993 70-93

1993 69-93

1993 63-93

4

1993 79-93

4

1993 58-93

28

1993 80-93

1993 73-93

1993 64-93

1993 44-93

4

4

year	sample	Z Y G	I S O	M A L	I M a n p	I N S S I	I N S S I	I N S S I	A R e a	A C a	N E M	N E M	O L I	P i s	G a s	B i v	D a p a	O S T	D I P	L o t a	T p	D d	
1992	18-92													145							221	1.44	
1992	28-92													44							148	0.77	
1992	12-92																				252	1.41	
1992	59-92													4		4					336	2.19	
1992	23-92													4							336	1.75	
1992	56-92																				684	4.87	
1992	66-92																				112	2.37	
1992	67-92																				108	1.89	
1992	33-92																				0	0.00	
1992	68-92													12							2077	15.28	
1992	04-92																				548	4.46	
1992	32-92																				138	2.35	
1992	26-92													28							644	7.81	
1992	98-92																				68	1.72	
1992	11-92													400							2736	3252	56.17
1992	35-92																				46	0.81	
1992	96-92																				64	1.84	
1992	54-92													1		1					296	1.88	
1992	99-92																				148	1.46	
1992	34-92																				54	0.89	
1992	31-92													4							120	1.48	
1992	04-92																				292	1.46	
1992	05-92																				1829	9.43	
1992	60-92																				1312	4.76	
1992	00-92																				32	0.19	
1992	93-92																				120	0.69	
1992	64-92													4							196	1.30	
1992	59-92																				1488	7.50	
1992	69-92																				832	4.12	
1992	97-92																				544	4.51	
1992	58-92																				821	4.18	
1992	56-92																				56	0.33	
1992	62-92																				600	3.50	
1992	07-92													4							104	0.61	
1992	10-92																				67	0.39	
1992	03-92																				112	0.85	
1992	25-92													4							216	1.57	
1992	24-92																				160	1.22	
1992	29-92													12							92	0.85	
1992	39-92													8							160	1.48	
1993	67-93																				152	0.97	
1993	60-93																				172	0.95	
1993	62-93																				360	2.17	
1993	61-93																				132	1.17	
1993	59-93																				296	1.93	
1993	71-93																				100	0.72	
1993	70-93																				324	2.31	
1993	69-93																				36	0.29	
1993	63-93																				48	0.23	
1993	79-93													4							236	1.37	
1993	58-93																				100	0.58	
1993	80-93													4							108	0.94	
1993	73-93																				108	0.80	
1993	64-93																				28	0.15	
1993	44-93																				1020	6.58	

year	sample	Creek	Site North South	Time			Velocity Set m·s ⁻¹	Water Depth cm	Water Temp. °C	Date Collected mmddyy	Time			Velocity Set m·s ⁻¹	Water Depth cm	Water Temp. °C	Volume Sampled m ³	Aperture Set %
				Date	Set	h:m					Date	Set	h:m					
1993	45-93	Bivouac	S	5/7/93	9:30	0.64	0.8	5/8/93	9:30	0.58				1.2	204	100		
1993	40-93	Forfar	S	5/7/93	14:30	0.42	2.4	5/8/93	14:15	0.42				4.1	139	100		
1993	38-93	Forfar	N	5/7/93	14:30	0.33	2.4	5/8/93	14:20	0.32				4.1	107.9	100		
1993	47-93	Gluskie	N	5/7/93	10:30	0.88	1.1	5/8/93	10:45	0.9				1.6	300.7	100		
1993	48-93	Gluskie	S	5/7/93	10:30	0.52	1.1	5/8/93	10:45	0.48				1.6	168.9	100		
1993	37-93	Kynoch	S	5/7/93	15:30	0.64	3	5/8/93	15:25	0.53				4.4	195	100		
1993	36-93	O'Ne-eil	N	5/7/93	15:30	0.48	3	5/8/93	15:20	0.55				4.4	163.7	100		
1993	46-93	Bivouac	N	5/8/93	9:30	0.4	1.2	5/9/93	9:30	0.48					147.1	100		
1993	34-93	Bivouac	S	5/8/93	9:30	0.58	1.2	5/9/93	9:30	0.69					212.3	100		
1993	42-93	Forfar	N	5/8/93	14:36	0.38	4.1	5/9/93	14:45	0.34				3.1	121.2	100		
1993	49-93	Forfar	S	5/8/93	14:36	0.42	4.1	5/9/93	14:45	0.4				3.1	138.1	100		
1993	35-93	Gluskie	N	5/8/93	11:05	0.96	1.6	5/9/93	11:05	1.1				1.9	344.4	100		
1993	39-93	Gluskie	S	5/8/93	11:05	0.58	1.6	5/9/93	11:00	0.78				1.9	226.6	100		
1993	43-93	O'Ne-eil	N	5/8/93	15:45	0.7	4.4	5/9/93	15:45	0.74				3.6	240.7	100		
1993	41-93	O'Ne-eil	S	5/8/93	15:45	0.6	4.4	5/9/93	15:45	0.69				3.6	215.7	100		
1993	33-93	Bivouac	N	5/28/93	13:25	0.89	7.2	5/29/93	13:20	0.82				8	284.9	100		
1993	84-93	Bivouac	S	5/28/93	13:25	0.82	7.2	5/29/93	13:20	0.76				8	263.3	100		
1993	83-93	Forfar	N	5/28/93	11:10	0.67	5.2	5/29/93	12:15	0.74				5.9	246.3	100		
1993	35-93	Gluskie	N	5/28/93	12:15	0.62	6.9	5/29/93	13:45	0.53				7.3	204.3	100		
1993	31-93	Gluskie	S	5/28/93	12:15	0.62	6.9	5/29/93	13:45	0.71				7.3	236.3	100		
1993	36-93	O'Ne-eil	N	5/28/93	10:10	1.02	5.2	5/29/93	11:20	1.02				6.2	357.7	100		
1993	82-93	O'Ne-eil	S	5/28/93	10:10	0.99	5.2	5/29/93	11:20	1.12				6.2	370	100		
1993	32-93	Bivouac	S	5/29/93	13:30	0.76	8	5/30/93	12:00	0.72				7.7	262.9	100		
1993	86-93	Bivouac	N	5/29/93	13:30	0.82	8	5/30/93	12:00	0.8				7.7	253.9	100		
1993	40-93	Forfar	S	5/29/93	12:25	0.93	5.9	5/30/93	11:00	0.83				5.7	276.8	100		
1993	37-93	Gluskie	S	5/29/93	14:05	0.61	7.3	5/30/93	12:30	0.62				6.9	193.5	100		
1993	34-93	Gluskie	N	5/29/93	14:05	0.53	7.3	5/30/93	12:30	0.61				6.9	143.5	100		
1993	39-93	O'Ne-eil	N	5/29/93	11:20	1.02	6.2	5/30/93	10:10	1.12				6.5	272.3	100		
1993	38-93	O'Ne-eil	S	5/29/93	11:30	1.08	6.2	5/30/93	10:15	1.08				6.5	342.3	100		
1993	57-93	Bivouac	N	6/7/93	15:00	0.62	8.6	6/8/93	15:10	0.63				7.3	219.2	100		
1993	49-93	Bivouac	N	6/7/93	15:00	0.8	8.6	6/8/93	15:10	0.68				7.3	249.2	100		
1993	76-93	Forfar	N	6/7/93	14:10	0.92	8.3	6/8/93	13:30	0.86				7.4	276.9	100		
1993	55-93	Forfar	S	6/7/93	14:10	1.03	8.3	6/8/93	13:30	0.99				7.4	356.4	100		
1993	74-93	Gluskie	N	6/7/93	13:00	0.58	8	6/8/93	14:00	0.52				7.3	195	100		
1993	52-93	Gluskie	S	6/7/93	13:00	0.44	8	6/8/93	14:00	0.44				7.3	153.3	100		
1993	51-93	O'Ne-eil	N	6/7/93	13:40	0.62	8.8	6/8/93	12:45	0.61				8.2	197.8	100		
1993	54-93	Bivouac	S	6/8/93	15:20	0.68	7.3	6/9/93	14:20	0.65				7.4	213.1	100		
1993	56-93	Bivouac	N	6/8/93	15:20	0.67	7.3	6/9/93	14:20	0.54				7.4	193.9	100		
1993	81-93	Forfar	S	6/8/93	13:45	1.03	7.4	6/9/93	13:30	1.05				7.8	344.1	100		
1993	21-93	Forfar	N	6/8/93	13:45	0.93	7.4	6/9/93	13:30	0.85				7.8	294.5	100		
1993	77-93	Gluskie	N	6/8/93	14:15	0.54	7.3	6/9/93	13:00	0.4				6.6	195	100		
1993	28-93	Gluskie	S	6/8/93	14:15	0.48	7.3	6/9/93	13:00	0.45				6.6	150.6	100		
1993	19-93	O'Ne-eil	S	6/8/93	13:00	0.62	8.2	6/9/93	12:30	0.58				7.5	196.4	100		
1993	53-93	O'Ne-eil	N	6/8/93	13:00	0.65	8.2	6/9/93	12:30	0.52				7.5	191.5	100		
1993	50-93	Gluskie	S	6/22/93	11:00	0.7	6.3	6/23/93	10:45	0.45				6.2	186.5	100		
1993	18-93	Gluskie	N	6/22/93	11:00	0.9	6.3	6/23/93	10:45	0.86				6.2	291.2	100		
1993	1-93	O'Ne-eil	N	6/22/93	15:20	0.68	7.1	6/23/93	15:10	0.47				8.4	190.9	100		
1993	75-93	O'Ne-eil	S	6/22/93	15:20	0.71	7.1	6/23/93	15:10	0.55				8.4	209.2	100		
1993	65-93	Bivouac	S	6/24/93	17:10	0.65		6/25/93	17:10	0.58					205.6	100		
1993	27-93	Bivouac	N	6/24/93	17:10	0.69		6/25/93	17:10	0.64					222.4	100		
1993	25-93	Forfar	S	6/24/93	15:00	0.7	7.8	6/25/93	15:00	0.64				8.4	224	100		
1993	66-93	Forfar	N	6/24/93	15:00	0.6	7.8	6/25/93	15:00	0.54				8.4	190.6	100		
1993	68-93	Gluskie	S	6/24/93	17:27	0.52	7.8	6/25/93	17:30	0.49				8.1	168.9	100		
1993	22-93	Gluskie	N	6/24/93	17:27	1.13	7.8	6/25/93	17:30	0.98				8.1	352.8	100		
1993	24-93	O'Ne-eil	S	6/24/93	15:40	0.58	9.2	6/25/93	15:40	0.47				10	175.5	100		

year	sample	S c o o a	H e t P a	D I P p	D I P l	A g r a	B I e l	<i>D i o s i</i>	B i b a	B o m a	C e r a	C e r l	<i>F o r s i</i>	C h a s a	C h a s a	C h i a	C h i p	C h i l	A b / s l	C a l	P h o a	C e c a
1993	45-93																		364			
1993	40-93																		456	4		
1993	38-93																	228	168			
1993	47-93																		328			
1993	48-93																		164			
1993	37-93							4						68					3004			
1993	36-93																4	1656		4		
1993	46-93																		176			
1993	34-93																		32			
1993	42-93					8													472			
1993	49-93																		672			
1993	35-93					8												20	940			
1993	39-93																		496			
1993	43-93						8	40											52	12		
1993	41-93																					
1993	33-93								32										1472			
1993	84-93	4		8		20		14						4				48	28	460		
1993	83-93																		160	32		
1993	35-93								32										32	96		
1993	31-93																		352			
1993	36-93																					
1993	82-93																		112	432		
1993	32-93								64										96			
1993	86-93								32										96			
1993	40-93																		56			
1993	37-93					32													160			
1993	34-93																		96			
1993	39-93					4										4			180			
1993	38-93						32												288			
1993	57-93			40				8									144	4	128			
1993	49-93							96										256	672			
1993	76-93			4				4										32	513	4		
1993	55-93					3												4	523			
1993	74-93																		16			
1993	52-93																		56			
1993	51-93					4													436			
1993	54-93																	8				
1993	56-93																		48			
1993	81-93																		176			
1993	21-93																		288			
1993	77-93						4		12								44	16	596	12		
1993	28-93																					
1993	19-93																		32			
1993	53-93																		128			
1993	50-93					8												24		48		
1993	18-93																		80			
1993	1-93																		12	108		
1993	75-93						8											16	52	320		
1993	65-93																		56			
1993	27-93																		32			
1993	25-93					8													120			
1993	66-93																	8	308			
1993	68-93																		80			
1993	22-93					4		4											16			
1993	24-93																		16			

year	sample	Z	I	M	N	N	N	N	R	A	A	N	E	N	O	P	G	B	D	L	O	D	T	D	
		Y	S	A	S	S	S	S	S	A	A	M	M	E	L	I	S	S	V	a	p	t	p	d	
		G	O	L	a	n	p	i	e	a	a	M	M	M	I	s	S	V	a	S	T	P	T	D	
1993	45-93																			15		599	2.94		
1993	40-93																			4		560	4.03		
1993	38-93																			4		524	4.86		
1993	47-93																			32		540	1.80		
1993	48-93																					484	2.87		
1993	37-93																					3240	16.62		
1993	36-93																			8	12	20	8	4	4
1993	46-93																						2348	14.34	
1993	34-93																						256	1.74	
1993	42-93																						128	0.60	
1993	49-93																			4		608	5.02		
1993	35-93																						50	1050	7.60
1993	39-93																			4		2	1070	3.11	
1993	43-93																			4			1456	6.43	
1993	41-93																						292	1.21	
1993	33-93																			32		216	1.00		
1993	84-93																						1952	6.85	
1993	83-93																						1465	5.56	
1993	35-93																						288	1.17	
1993	31-93																						256	1.25	
1993	36-93																						672	2.84	
1993	82-93																						128	0.36	
1993	32-93																						784	2.12	
1993	86-93																			32		544	2.07		
1993	40-93																						512	2.02	
1993	37-93																						392	1.42	
1993	34-93																						224	1.16	
1993	39-93																						224	1.56	
1993	38-93																						490	1.80	
1993	57-93																						480	1.40	
1993	49-93																						308	6.39	
1993	76-93																						1400	6.39	
1993	55-93																						1700	6.82	
1993	74-93																						961	3.47	
1993	52-93																						1298	3.64	
1993	51-93																						176	0.90	
1993	54-93																						168	1.10	
1993	56-93																						914	4.62	
1993	81-93																						96	0.45	
1993	21-93																						1056	5.45	
1993	77-93																						336	0.98	
1993	28-93																						608	2.06	
1993	19-93																						1652	8.47	
1993	53-93																						56	0.37	
1993	50-93																						48	0.24	
1993	18-93																						176	0.92	
1993	1-93																						128	0.69	
1993	75-93																						96	0.33	
1993	65-93																						256	1.34	
1993	27-93																						88	0.43	
1993	25-93																						72	0.32	
1993	66-93																						288	1.29	
1993	68-93																						520	2.73	
1993	22-93																						176	1.04	
1993	24-93																						100	0.28	

year	sample	Creek	Site North South	Time				Water Depth cm	Water Temp. °C	Date Collected mmddyy	Time				Velocity m·s⁻¹	Water Depth cm	Water Temp. °C	Volume Sampled m³	Aperture Set %
				Date	Set	Velocity	m·s⁻¹				Time	Set	Velocity	m·s⁻¹					
1993	23-93	O'Ne-eil	N	6/24/93	15:40	0.53		9.2		6/25/93	15:40	0.43		10	160.5		100		
1993	20-93	Bivouac	N	6/25/93	17:22	0.8				6/26/93	17:20	0.88			280.9		100		
1993	29-93	Bivouac	S	6/25/93	17:22	0.65				6/26/93	17:20	0.73			230.7		100		
1993	26-93	Forfar	N	6/25/93	15:05	0.6		8.4		6/26/93	15:00	0.64		8.2	206.6		100		
1993	78-93	Forfar	S	6/25/93	15:05	0.66		8.4		6/26/93	15:00	0.78		8.2	239.9		100		
1993	4-93	Bivouac	N	7/6/93	12:00	0.44		8.6		7/7/93	9:55	0.52		8.4	146.6		100		
1993	19-93	Bivouac	S	7/6/93	12:00	0.4		8.6		7/7/93	9:55	0.45		8.4	129.8		100		
1993	5-93	Forfar	S	7/6/93	11:00	0.66		8.6		7/7/93	8:55	0.65		8.2	200		100		
1993	8-93	Forfar	N	7/6/93	11:00	0.56		8.6		7/7/93	8:55	0.56		8.2	171		100		
1993	17-93	Gluskie	S	7/6/93	12:50	0.64		8.3		7/7/93	10:50	0.68		8.3	202.3		100		
1993	18-93	Gluskie	N	7/6/93	12:50	0.59		8.3		10:50	12:14	0.51		8.3	168.6		100		
1993	13-93	O'Ne-eil	N	7/6/93	10:30	0.49		9.4		7/7/93	8:25	0.39		9	160.3		100		
1993	12-93	O'Ne-eil	S	7/6/93	10:30	0.56		9.4		7/7/93	8:25	0.44		9	152.7		100		
1993	2-93	Bivouac	N	7/7/93	10:10	0.55		8.4		7/8/93	11:35	0.35		9	159.4		100		
1993	16-93	Bivouac	S	7/7/93	10:10	0.38		8.4		7/8/93	11:35	0.33		9	126.5		100		
1993	11-93	Forfar	N	7/7/93	9:10	0.59		8.2		7/8/93	8:55	0.61		8.3	198.5		100		
1993	3-93	Forfar	S	7/7/93	9:10	0.64		8.2		7/8/93	8:55	0.65		8.3	213.4		100		
1993	15-93	Gluskie	N	7/7/93	11:10	0.54		8.3		7/8/93	11:55	0.56		8.5	192.2		100		
1993	9-93	Gluskie	S	7/7/93	11:10	0.66		8.3		7/7/93	11:55	0.68		8.5	229.4		100		
1993	14-93	O'Ne-eil	N	7/7/93	8:35	0.43		9		7/8/93	8:25	0.41		9.2	139.4		100		
1993	10-93	O'Ne-eil	S	7/7/93	8:35	0.47		9		7/8/93	8:25	0.43		9.2	150		100		
1993	6-93	Bivouac	N	7/23/93	10:10	0.53	18	9.7		7/24/93	11:45	0.5	18	10	165.7		100		
1993	31-93	Bivouac	S	7/23/93	10:15	0.31	16	9.7		7/24/93	11:45	0.28	15	10	92.1	80			
1993	20-93	Forfar	S	7/23/93	12:05	0.32	26	10		7/24/93	14:05	0.3	25	11	112.3		100		
1993	21-93	Forfar	N	7/23/93	12:05	0.51	38	10		7/24/93	14:05	0.49	35	11	181.1		100		
1993	25-93	Gluskie	S	7/23/93	14:30	0.31	16	11		7/24/93	13:30	0.4	25	11	113.8		100		
1993	7-93	Gluskie	N	7/23/93	14:30	0.44	26	11		7/24/93	13:30	0.29	15	11	117		100		
1993	22-93	O'Ne-eil	S	7/23/93	12:35	0.63	29	11		7/24/93	14:35	0.65	30	12	231.8		100		
1993	33-93	O'Ne-eil	N	7/23/93	12:35	0.57	28	11		7/24/93	14:35	0.5	28	12	193.8		100		
1993	30-93	Bivouac	N	7/24/93	11:58	0.45	17	10		7/25/93	10:20	0.4	16	9.4	109.5		100		
1993	29-93	Bivouac	S	7/24/93	11:58	0.3	15	10		7/25/93	10:20	0.31	14	9.4	95.3	75			
1993	26-93	Forfar	S	7/24/93	14:25	0.32	28	11		7/25/93	13:00	0.32	28	13	100.7		100		
1993	24-93	Forfar	N	7/24/93	14:25	0.5	34	11		7/25/93	13:00	0.51	34	13	158.9		100		
1993	28-93	Gluskie	S	7/24/93	13:45	0.4	25	11		7/25/93	12:30	0.52	26	11	104.6		100		
1993	32-93	Gluskie	N	7/24/93	13:45	0.29	15	11		7/25/93	12:30	0.32	16	11	96.7		100		
1993	23-93	O'Ne-eil	N	7/24/93	14:45	0.57	26	12		7/25/93	15:15	0.52	26	14	186		100		
1993	27-93	O'Ne-eil	S	7/24/93	14:45	0.67	28	12		7/25/93	15:15	0.67	28	14	228.7		100		
1993	92-93	Bivouac	S	9/15/93	11:40	0.59	17	8.5	9/16/93	11:40	0.6	18	6.3	198.9		100			
1993	93-93	Bivouac	N	9/15/93	11:45	0.95	15	6.3	9/16/93	11:45	0.85	15	6.3	297.6		100			
1993	94-93	Forfar	S	9/15/93	14:25	0.17	20	8.9	9/16/93	10:20	0.1	22	6	34.5		100			
1993	95-93	Forfar	N	9/15/93	14:30	0.29	26	8.9	9/16/93	10:20	0.24	26	6	73.5		100			
1993	98-93	Gluskie	S	9/15/93	15:20	0.35	18	8.2	9/16/93	13:25	0.38	18	7.1	111.5		100			
1993	89-93	Gluskie	N	9/15/93	15:25	0.33	19	8.2	9/16/93	13:30	0.36	17	7.1	105.4		100			
1993	96-93	O'Ne-eil	N	9/15/93	13:10	0.77	24	9.2	9/16/93	15:45	0.79	24	9.2	288.8		100			
1993	97-93	O'Ne-eil	S	9/15/93	13:15	0.85	22	9.2	9/16/93	15:40	0.87	22	9.2	318.5		100			
1993	06-93	Bivouac	S	9/16/93	11:40	0.6	18	6.3	9/17/93	12:40	0.6	18	6.4	209		100			
1993	85-93	Bivouac	N	9/16/93	11:45	0.85	15	6.3	9/17/93	12:45	0.85	15	6.4	296.1		100			
1993	90-93	Forfar	S	9/16/93	17:30	0.16	22	7.6	9/17/93	16:25	0.16	22	7.7	51.1		100			
1993	91-93	Forfar	N	9/16/93	17:35	0.51	28	7.6	9/17/93	16:30	0.51	28	7.7	162.9		100			
1993	01-93	Gluskie	S	9/16/93	13:25	0.38	18	7.1	9/17/93	13:45	0.38	18	7.1	128.8		100			
1993	04-93	Gluskie	N	9/16/93	13:30	0.36	17	7.1	9/17/93	13:50	0.36	17	7.1	122		100			
1993	87-93	O'Ne-eil	S	9/16/93	15:40	0.87	22	9.2	9/17/93	15:30	0.87	22	8.9	291.9		100			
1993	13-93	O'Ne-eil	N	9/16/93	15:45	0.79	24	9.2	9/17/93	15:45	0.79	24	8.9	264.2		100			
1993	05-93	Bivouac	S	9/21/93	10:00	0.73	14	4.4	9/22/93	10:00		13	5.1	233.3	70				

year	sample	S c o o a	H e t a	D I P a	D I P p	A g r a	B i l e l	D i o s /	B i b a	B o m a	C e r a	C e r l	F o r s /	C h a a	C h a s a	C h i a	C h i p	C h i l	A b / s /	C a l i	P h o a	C e c a	
1993	23-93																						
1993	20-93																						
1993	29-93																			160			
1993	26-93																			128			
1993	78-93																			96			
1993	4-93																						
1993	19-93																			256			
1993	5-93																			128			
1993	8-93																	4	4				
1993	17-93																		28	8	236		4
1993	18-93																		20	40	164		
1993	13-93																				144		
1993	12-93																		8	8	40		
1993	2-93																				128		
1993	16-93																				144		
1993	11-93																			192	640		
1993	3-93	4	4	8															8	36	364		
1993	15-93																				192		
1993	9-93																		88	36	536		
1993	14-93																		16				
1993	10-93																				144		
1993	6-93																			12	112		8
1993	31-93			12															12		60		
1993	20-93																				616		
1993	21-93																				7		
1993	25-93																				112		
1993	7-93			8																	36		
1993	22-93																				816		
1993	33-93																				82		
1993	30-93			4														7		4	80		
1993	29-93																		8	16	64		
1993	26-93																		24	200			
1993	24-93																				40		
1993	28-93			8																	184		
1993	32-93			40															52		100		4
1993	23-93			8																8	140		
1993	27-93																				168		
1993	92-93																		12	8	8		
1993	93-93																		12		36		
1993	94-93																				8		
1993	95-93			8															16		428		
1993	98-93																		2	2			
1993	89-93																						
1993	96-93																						
1993	97-93			2																			
1993	06-93																				8		
1993	85-93																		4		16		
1993	90-93																						
1993	91-93																				4		
1993	01-93																				44		
1993	04-93																				12		
1993	87-93																		4				
1993	13-93			4	56																16		
1993	05-93			4																	12		

year sample	S c e a	L E P a	L E P l	A r c l	N e p l	P y r l	P L E a	P L E n	P L E l	C a p a	P a r s a	N e m n	N e m l	P o d s n	Z a p s n	M a i s n	C h i n	K a t s n	U r a s n	A l l s n	P a r s n
1993 23-93																					
1993 20-93																					
1993 29-93																		16			
1993 26-93																					
1993 78-93																			36		
1993 4-93																					
1993 19-93																		16			
1993 5-93																					
1993 8-93											4								148		
1993 17-93											4								8		
1993 18-93											16								16		
1993 13-93																					
1993 12-93											4										
1993 2-93																					
1993 16-93																		16			
1993 11-93																		16			
1993 3-93							4				88						12		4		
1993 15-93																			40		
1993 9-93			8								24					24		16		8	
1993 14-93																					
1993 10-93																					
1993 6-93																					
1993 31-93																		16			
1993 20-93																		16			
1993 21-93																		1			
1993 25-93																		8			
1993 7-93																					
1993 22-93																		16			
1993 33-93	1										4				8	4			26		
1993 30-93									4												
1993 29-93																			8		
1993 26-93																			8		
1993 24-93											24								24		
1993 28-93											16								32		
1993 32-93																			28		
1993 23-93											16								36		
1993 27-93											8								24		
1993 92-93									16												
1993 93-93											40								104		
1993 94-93									20										12		
1993 95-93																					
1993 98-93																					
1993 89-93																					
1993 96-93										4									4		
1993 97-93																			2		
1993 06-93																			8		
1993 85-93																					
1993 90-93																			8		
1993 91-93																			4		
1993 01-93																			4		
1993 04-93									16												
1993 87-93											4										
1993 13-93																		20			
1993 05-93												4							20		

year	sample	S w e s n	H a p s n	S u w s n	L e u n	P e n	I s o n	P e r n	P t e n	T a e n	T a e s s	P S O	P s o a	O R T	N E U a	H e m l	S i a l	T H Y a	T H Y I	P h i l	P h i l	T h r i	T R i	T R i
1993	23-93																							
1993	20-93																							
1993	29-93																							
1993	26-93																							
1993	78-93																							
1993	4-93																							
1993	19-93																							
1993	5-93																							
1993	8-93																							
1993	17-93																							
1993	18-93																							
1993	13-93																							
1993	12-93																							
1993	2-93																							
1993	16-93																							
1993	11-93																							
1993	3-93																							
1993	15-93																							
1993	9-93																							
1993	14-93																							
1993	10-93																							
1993	6-93																							
1993	31-93																							
1993	20-93																							
1993	21-93																							
1993	25-93																							
1993	7-93																							
1993	22-93																							
1993	33-93																							
1993	30-93																							
1993	29-93																							
1993	26-93																							
1993	24-93																							
1993	28-93																							
1993	32-93																							
1993	23-93																							
1993	27-93																							
1993	92-93																							
1993	93-93																							
1993	94-93																							
1993	95-93																							
1993	98-93																							
1993	89-93																							
1993	96-93																							
1993	97-93																							
1993	06-93																							
1993	85-93																							
1993	90-93																							
1993	91-93																							
1993	01-93																							
1993	04-93																							
1993	87-93																							
1993	13-93																							
1993	05-93																							

year	sample	Creek	Site		North mmddyy	Time Set h:m	Velocity Set m·s ⁻¹	Water Depth cm	Water Temp. °C	Date Collected mmddyy	Time Collected h:m	Velocity Collected m·s ⁻¹	Water Depth cm	Water Temp. °C	Volume Sampled m ³	Aperture Set %
			North	South												
1993	88-93	Bivouac	N	S	9/21/93	10:10	0.7	14	4.4	9/22/93	10:00		16	5.1	176.9	70
1993	14-93	Forfar	S	S	9/21/93	14:10	0.09	12	5	9/22/93	14:15			6.5	30.2	100
1993	03-93	Forfar	N	S	9/21/93	14:20	0.39	25	9	9/22/93	14:15			6.5	130	100
1993	15-93	Gluskie	S	S	9/21/93	10:35	0.21	25	4.4	9/22/93	10:35			5.5	70.2	100
1993	16-93	Gluskie	N	S	9/21/93	10:40	0.14	22	4.4	9/22/93	10:35			5.5	46.8	100
1993	17-93	O'Ne-eil	S	S	9/21/93	12:15	0.74	18	5	9/22/93	12:20			6.2	246.6	100
1993	09-93	O'Ne-eil	N	S	9/21/93	12:25	0.72	22	5	9/22/93	12:20			6.2	241.5	100
1993	99-93	Bivouac	N	S	9/22/93	10:00	0.56			9/23/93	9:50	0.56		5.5	186.6	100
1993	00-93	Bivouac	S	S	9/22/93	10:10	0.62			9/23/93	9:45	0.62	14	5.5	205.1	75
1993	02-93	Forfar	N	S	9/22/93	14:30	0.21		6.4	9/23/93	14:15	0.21	21	7.5	70.2	100
1993	12-93	Forfar	S	S	9/22/93	14:30			6.4	9/23/93	14:15	0.15	11	7.5	36.8	100
1993	08-93	Gluskie	S	S	9/22/93	10:45			5.6	9/23/93	10:15	0.22	25	6.9	72.5	100
1993	11-93	Gluskie	N	S	9/22/93	10:45			5.6	9/23/93	10:20	0.1	14	6.9	33.1	100
1993	07-93	O'Ne-eil	N	S	9/22/93	12:25			6.6	9/23/93	12:15	0.64	22	7	213.3	100
1993	10-93	O'Ne-eil	S	S	9/22/93	12:25			6.6	9/23/93	12:10	0.43	16	7	142.8	100
1993	41-93	Gluskie	N	S	12/9/93	15:50	0.25		0.2	12/10/93	15:15	0.25		0.2	81.6	100
1993	43-93	O'Ne-eil	N	S	12/9/93	15:00	0.59		0.5	12/10/93	13:40			0.5	186.3	100
1993	45-93	Forfar	S	S	12/10/93	14:40	0.38		0.5	12/11/93	15:00	0.37		0.5	123.7	100
1993	44-93	Gluskie	N	S	12/10/93	15:15	0.25		0.2	12/11/93	15:45	0.27		0.2	88.7	100
1993	42-93	O'Ne-eil	S	S	12/10/93	13:40	0.59		0.2	12/11/93	14:30	0.41		0.4	172.9	100
1993	46-93	Gluskie	N	S	12/11/93	16:00	0.25		0	12/12/93	11:00	0.25		0.2	66.2	100
1994	01-94	Forfar	N	S	3/15/94	11:15	0.19	14	0.4	3/16/94	13:20	0.19	15	0.5	62.1	80
1994	58-94	Forfar	S	S	3/15/94	11:20	0.15	12	0.4	3/16/94	13:25	0.14	13	0.5	47.4	80
1994	44-94	Gluskie	N	S	3/15/94	14:05	0.17	20	0.2	3/15/94	13:30	0.17	20	0.3	55.5	100
1994	27-94	Gluskie	S	S	3/15/94	14:10	0.19	24	0.2	3/16/94	13:35	0.19	24	0.3	62	100
1994	02-94	O'Ne-eil	N	S	3/15/94	15:00	0.27	24	1	3/16/94	14:45	0.27	24	1	89.4	100
1994	24-94	O'Ne-eil	S	S	3/15/94	15:15	0.34	30	1	3/16/94	14:50	0.34	30	1	111	100
1994	03-94	Forfar	N	S	3/16/94	13:20	0.19	15	0.5	3/17/94	10:40	0.19	15	0.5	56.5	100
1994	21-94	Forfar	S	S	3/16/94	13:25	0.14	13	0.5	3/17/94	10:45	0.14	13	0.5	41.6	100
1994	56-94	Gluskie	N	S	3/16/94	13:30	0.17	20	0.3	3/17/94	11:30	0.17	20	0.3	52.1	100
1994	57-94	Gluskie	S	S	3/16/94	13:35	0.19	24	0.3	3/17/94	11:35	0.19	24	0.3	58.3	100
1994	46-94	O'Ne-eil	N	S	3/16/94	14:55	0.27	24	1	3/17/94	12:30	0.27	24	1	81.2	100
1994	40-94	O'Ne-eil	S	S	3/16/94	15:05	0.34	30	1	3/17/94	12:35	0.34	30	1	101.9	100
1994	48-94	Bivouac	N	S	4/24/94	11:45	0.59	30	0.7	4/25/94	11:40	0.57	29	0.7	192.6	100
1994	05-94	Bivouac	S	S	4/24/94	11:55	0.58	26	0.7	4/25/94	11:45	0.56	25	0.7	189.3	100
1994	02-94	Forfar	S	S	4/24/94	10:20	0.45	26	0.6	4/25/94	9:40	0.44	25	0.5	144.7	100
1994	06-94	Gluskie	N	S	4/24/94	11:10	0.59	30	0.5	4/25/94	10:45	0.51	29	0.6	180.7	100
1994	95-94	Gluskie	S	S	4/24/94	11:15	0.64	28	0.5	4/25/94	10:55	0.58	26	0.6	201.2	100
1994	7-94	O'Ne-eil	N	S	4/24/94	13:25	0.61	26	2	4/25/94	13:20	0.58	24	2.1	198.3	100
1994	42-94	O'Ne-eil	S	S	4/24/94	13:30	0.56	26	2	4/25/94	13:30	0.52	24	2.1	180.6	100
1994	49-94	Bivouac	N	S	4/25/94	11:50	0.52	28	0.7	4/26/94	12:00	0.45	28	1	163.4	100
1994	96-94	Bivouac	S	S	4/25/94	12:00	0.54	24	0.7	4/26/94	12:05	0.66	24	1	201.3	100
1994	04-94	Forfar	N	S	4/25/94	10:05	0.64	22	0.5	4/26/94	10:05	0.76	22	0.5	234.1	100
1994	13-94	Gluskie	N	S	4/25/94	11:00	0.62	28	0.6	4/26/94	10:55	0.42	22	0.8	173.3	100
1994	04-94	Gluskie	S	S	4/25/94	11:05	0.58	28	0.6	4/26/94	11:00	0.58	26	0.8	193.3	100
1994	59-94	O'Ne-eil	N	S	4/25/94	15:00	1.05	24	2.1	4/26/94	16:05	1.19	24	3.8	391.5	100
1994	65-94	O'Ne-eil	S	S	4/25/94	15:05	1.1	24	2.1	4/25/94	16:10	1.09	24	3.8	382.7	100
1994	82-94	Bivouac	N	S	6/1/94	14:55	1.14		5.4	6/2/94	14:45	1.38		6	418.4	100
1994	78-94	Bivouac	S	S	6/1/94	14:55	0.77		5.4	6/2/93	14:45	0.68		6	240.8	100
1994	76-94	Forfar	S	S	6/1/94	9:10	0.5		3.5	6/2/94	9:05	0.64		3.6	190	100
1994	54-94	Forfar	N	S	6/1/94	9:10	0.65		3.5	6/2/94	9:05	0.68		3.6	221.7	100
1994	55-94	Gluskie	N	S	6/1/94	14:10	0.85		5.6	6/2/94	14:00	0.97		5.6	302.2	100
1994	81-94	Gluskie	S	S	6/1/94	14:16	0.72		5.6	6/2/94	14:05	0.84		5.6	259	100
1994	80-94	O'Ne-eil	N	S	6/1/94	10:15	0.91		5	6/2/94	10:10	1.08		4.9	331.7	100
1994	83-94	O'Ne-eil	S	S	6/1/94	10:15	0.87		5	6/2/94	10:10	0.84		4.9	285	100

year	sample	S c o o a	H e t a	D I P a	D I P p	A g r a	B I l	D i os i	B i b a	B o m a	C e r a	C e r i	F or s i	C h a a	C h a s a	C h i a	C h i p	C h i l	A b / s i	C a l i	P h o a	C e c a
1993	88-93															8		20				
1993	14-93															4		24				
1993	03-93																	8				
1993	15-93															20		8				
1993	16-93																	12				
1993	17-93															36	12	48				
1993	09-93															4		60				
1993	99-93																	4				
1993	00-93															8	24	160				
1993	02-93																					
1993	12-93																	12				
1993	08-93																					
1993	11-93															12		80				
1993	07-93																					
1993	10-93			10	4											24		28				
1993	41-93															32	485		4			
1993	43-93																	80				
1993	45-93																	56				
1993	44-93																	84				
1993	42-93																	72				
1993	46-93																					
1994	01-94																	8				
1994	58-94																	14				
1994	44-94																	16				
1994	27-94																	12				
1994	02-94															2		44				
1994	24-94																	36				
1994	03-94																	44				
1994	21-94																	63				
1994	56-94																	26				
1994	57-94																	13				
1994	46-94																	52				
1994	40-94																	8				
1994	48-94																	128				
1994	05-94																	224				
1994	02-94																	396				
1994	06-94																	736				
1994	95-94															16		800				
1994	7-94															20		112				
1994	42-94						16									16		752				
1994	49-94																	368				
1994	96-94																	24				
1994	04-94				4													300				
1994	13-94															4		68				
1994	04-94																	336				
1994	59-94																	328				
1994	65-94																	264				
1994	82-94																	64				
1994	78-94																					
1994	76-94																	176				
1994	54-94																	112				
1994	55-94															16		128				
1994	81-94															16		176				
1994	80-94																	112				
1994	83-94																	160				

year	sample	C u l a	C u l a	D e u l	D i x /	D i x a	D o l	D o l	E m l	E m l	E p l	E p l	M y l	M y c a	M y c p	M u l	M u s a	P h l	P u a	P s a	P r a	P t a	S c i a	S c i a	S i m a	S i m p
------	--------	------------------	------------------	------------------	------------------	------------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	------------------	------------------	-------------	------------------	-------------	-------------	-------------	-------------	-------------	------------------	------------------	------------------	------------------

1993 88-93

1993 14-93

1993 03-93

1993 15-93

1993 16-93

1993 17-93

1993 09-93

1993 99-93

1993 00-93

1993 02-93

1993 12-93

1993 08-93

1993 11-93

12

4

1993 07-93

1993 10-93

1993 41-93

4

1993 43-93

1993 45-93

1993 44-93

1993 42-93

1993 46-93

1994 01-94

1994 58-94

1994 44-94

1994 27-94

1994 02-94

1994 24-94

1994 03-94

1994 21-94

1994 56-94

1994 57-94

1994 46-94

1994 40-94

1994 48-94

1994 05-94

1994 02-94

1994 06-94

1994 95-94

1994 7-94

1994 42-94

1994 49-94

1994 96-94

1994 04-94

1994 13-94

1994 04-94

1994 59-94

1994 65-94

1994 82-94

1994 78-94

1994 76-94

1994 54-94

1994 55-94

1994 81-94

1994 80-94

1994 83-94

year	sample	Z Y G	I S O	M A L	I S a	I S n	I S p	I S l	A e e	A a a	N E M	N E M	O L I	P i s	G a s	B i v	D a p a	O s T	D I P	L o t a	T p	D d
1993	88-93																				152	0.86
1993	14-93																				72	2.38
1993	03-93																				44	0.34
1993	15-93																				104	1.48
1993	16-93																				36	0.77
1993	17-93													4							182	0.74
1993	09-93																				80	0.33
1993	99-93																				44	0.24
1993	00-93																				296	1.44
1993	02-93																				320	4.56
1993	12-93													1							81	2.20
1993	08-93																				52	0.72
1993	11-93														4						168	5.08
1993	07-93																				24	0.11
1993	10-93															12					204	1.43
1993	41-93															4					701	8.59
1993	43-93																				360	1.93
1993	45-93																				76	0.61
1993	44-93																				132	1.49
1993	42-93																				312	1.80
1993	46-93																				4	0.06
1994	01-94																				20	0.32
1994	58-94																				44	0.93
1994	44-94																				70	1.26
1994	27-94																				54	0.87
1994	02-94																				76	0.85
1994	24-94																				54	0.49
1994	03-94																				68	1.20
1994	21-94													1							119	2.86
1994	56-94																				200	3.84
1994	57-94																				143	2.45
1994	46-94																				136	1.67
1994	40-94																				30	0.29
1994	48-94																				208	1.08
1994	05-94																				272	1.44
1994	02-94																				1000	6.91
1994	06-94																				928	5.14
1994	95-94																				960	4.77
1994	7-94																				208	1.05
1994	42-94																				1312	7.26
1994	49-94																				16	4.70
1994	96-94																				768	4.24
1994	04-94														4						1220	5.21
1994	13-94																				112	0.65
1994	04-94																				448	2.32
1994	59-94																				368	0.94
1994	65-94																				264	0.69
1994	82-94																				140	0.33
1994	78-94																				80	1.20
1994	76-94																				640	3.37
1994	54-94																				352	1.59
1994	55-94																				528	1.75
1994	81-94																				624	2.41
1994	80-94																				192	0.58
1994	83-94																				224	0.79

year	sample	Creek	Site		Date Set mmddyy	Time Set h:m	Velocity Set m·s⁻¹	Water		Date mmddyy	Time h:m	Velocity m·s⁻¹	Water		Volume m³	Aperture %
			North	South				Depth cm	Temp. °C				Depth cm	Temp. °C		
1994	70-94	Bivouac	S	S	6/2/94	14:45	0.68	6	6.9	6/3/94	14:45	0.8	6	6.9	247.5	100
1994	69-94	Bivouac	N	N	6/2/94	14:45	1.25	6	6.9	6/3/94	14:45	1.17	6	6.9	404.7	100
1994	50-94	Forfar	N	N	6/2/94	9:10	0.72	3.6	4.7	6/3/94	9:10	0.63	4.7	4.7	222.4	100
1994	52-94	Forfar	S	S	6/2/94	9:10	0.6	3.6	4.7	6/3/94	9:10	0.6	4.7	4.7	200.7	100
1994	79-94	Gluskie	N	N	6/2/94	14:00	0.87	5.6	6.4	6/3/94	14:00	0.92	6.4	6.4	299.3	100
1994	51-94	Gluskie	S	S	6/2/94	14:00	0.8	5.6	6.4	6/3/94	14:00	0.93	6.4	6.4	289.3	100
1994	53-94	O'Ne-eil	N	N	6/2/94	10:15	1.03	4.9	6.8	6/3/94	10:10	1.11	6	6	356.7	100
1994	15-94	O'Ne-eil	S	S	6/2/94	10:15	0.97	4.9	6.8	6/3/94	10:10	1.05	6	6	340	100
1994	18-94	Bivouac	N	N	6/19/94	14:10	0.75	8	6.2	6/20/94	14:10	0.91	8	6.2	277.6	100
1994	05-94	Forfar	N	N	6/19/94	10:57	0.78	6.1	6.8	6/20/94	11:02	0.86	29	6.8	274.3	100
1994	29-94	Forfar	S	S	6/19/94	10:59	0.54	6.1	6.8	6/20/94	11:02	0.55	30	6.8	182.3	100
1994	66-94	O'Ne-eil	S	S	6/19/94	8:55	0.87	6.5	6.4	6/20/94	8:55	0.59	28	6.4	244.2	100
1994	67-94	O'Ne-eil	N	N	6/19/94	8:55	0.9	6.5	6.4	6/20/94	8:55	0.57	26	6.4	245.8	100
1994	47-94	Bivouac	N	N	6/20/94	14:20	0.79	25	7.9	6/21/94	14:22	0.86	26	7.9	275.9	100
1994	14-94	Bivouac	S	S	6/20/94	14:23	0.84	27	7.9	6/21/94	14:32	0.91	31	7.9	303.1	100
1994	06-94	Forfar	N	N	6/20/94	11:15	0.83	29	6.8	6/21/94	11:14	0.72	26	7	259.2	100
1994	30-94	Forfar	S	S	6/20/94	11:15	0.63	30	6.8	6/21/94	11:14	0.53	29	7	194	100
1994	19-94	Gluskie	S	S	6/20/94	12:59	0.3	32	7.2	6/21/94	12:59	0.24	24	7.8	90.3	100
1994	17-94	Gluskie	N	N	6/20/94	12:59	0.68	28	6.8	6/21/94	12:59	0.51	28	7.8	199	100
1994	64-94	O'Ne-eil	N	N	6/20/94	9:03	0.93	26	6.4	6/21/94	9:05	0.79	24	6.8	287.6	100
1994	68-94	O'Ne-eil	S	S	6/20/94	9:05	0.81	28	6.4	6/21/94	9:05	0.97	26	6.8	294.3	100
1994	97-94	Bivouac	N	N	7/19/94	15:23	0.55	20	12	7/20/94	15:20	0.48	22	13	172.6	100
1994	01-94	Bivouac	S	S	7/19/94	15:27	0.46	25	12	7/20/94	15:20	0.36	18	13	137.7	100
1994	26-94	Forfar	S	S	7/19/94	11:40	0.24	30	10	7/20/94	11:44	0.2	28	12	73.8	100
1994	08-94	Forfar	N	N	7/19/94	11:40	0.15	28	10	7/20/94	11:44	0.13	28	12	47	100
1994	33-94	Gluskie	S	S	7/19/94	14:17	0.19	25	12	7/20/94	14:21	0.18	24	13	62.1	100
1994	36-94	Gluskie	N	N	7/19/94	14:17	0.21	39	12	7/20/94	14:21	0.27	35	13	80.5	100
1994	75-94	O'Ne-eil	N	N	7/19/94	8:55	0.51	16	10	7/20/94	8:57	0.45	21	11	160.5	100
1994	74-94	O'Ne-eil	S	S	7/19/94	8:55	0.76	20	10	7/20/94	8:57	0.69	14	11	204.6	84
1994	00-94	Bivouac	N	N	7/20/94	15:28	0.52	22	13	7/21/94	14:20	0.36	20	13	142.1	100
1994	03-94	Bivouac	S	S	7/20/94	15:28	0.36	18	13	7/21/94	14:20	0.43	17	13	127.5	100
1994	23-94	Forfar	S	S	7/20/94	11:49	0.18	28	12	7/21/94	11:40	0.21	25	11	64.8	100
1994	22-94	Forfar	N	N	7/20/94	11:50	0.15	28	12	7/21/94	11:40	0.21	26	11	59.8	100
1994	99-94	Gluskie	N	N	7/20/94	14:27	0.28	35	13	7/21/94	14:35	0.18	37	13	77.2	100
1994	98-94	O'Ne-eil	N	N	7/20/94	9:09	0.39	21	11	7/21/94	9:21	0.44	22	12	139.8	100
1994	71-94	O'Ne-eil	S	S	7/20/94	9:10	0.72	14	11	7/21/94	9:21	0.85	14	12	198.3	75
1994	12-94	Bivouac	N	N	8/13/94	14:42	0.48	13	13	8/14/94	14:41	0.33	11	13	99.5	78
1994	87-94	Bivouac	S	S	8/13/94	14:42	0.42	14	13	8/14/94	14:41	0.31	14	13	104.9	88
1994	11-94	Forfar	N	N	8/13/94	9:18	0.11	33	12	8/14/94	9:23	0.09	32	13	33.6	100
1994	28-94	Forfar	S	S	8/13/94	9:20	0.03	32	12	8/14/94	9:23	0.07	30	13	16.7	100
1994	38-94	Gluskie	S	S	8/13/94	13:21	0.12	24	13	8/14/94	13:30	0.14	18	13	43.8	100
1994	89-94	Gluskie	N	N	8/13/94	13:23	0.21	32	13	8/14/94	13:30	0.15	29	13	83.9	100
1994	61-94	O'Ne-eil	N	N	8/13/94	8:10	0.97	27	12	8/14/94	8:15	0.83	18	12	151	100
1994	60-94	O'Ne-eil	S	S	8/13/94	8:11	0.65	16	12	8/14/94	8:15	0.58	22	12	206.3	97
1994	43-94	Bivouac	N	N	8/14/94	14:46	0.42	11	13	8/15/94	15:03	0.28	14	12	85	69
1994	73-94	Bivouac	S	S	8/14/94	14:46	0.32	14	13	8/15/94	15:03	0.31	14	12	83.2	84
1994	09-94	Forfar	N	N	8/14/94	9:38	0.11	30	13	8/15/94	9:36	0.12	28	12	38.5	100
1994	10-94	Forfar	S	S	8/14/94	9:38	0.06	32	13	8/15/94	9:36	0.05	29	12	18.4	100
1994	37-94	Gluskie	S	S	8/14/94	13:34	0.14	18	13	8/15/94	13:42	0.14	18	13	43.7	100
1994	39-94	Gluskie	N	N	8/14/94	13:38	0.14	29	13	8/15/94	13:42	0.15	29	13	48.7	100
1994	94-94	O'Ne-eil	S	S	8/14/94	8:36	0.51	18	11	8/15/94	8:05	0.46	15	11	296.7	94
1992	94-92	O'Ne-eil	S	S	9/22/94	16:00	0.49	11.2	11	9/23/94	15:00	0.53	11	11	163.4	100
1994	93-94	Bivouac	S	S	9/23/94	10:30	0.22	18	8	9/24/94	10:45	0.21	18	8.2	72.7	100
1994	90-94	Bivouac	N	N	9/23/94	10:35	0.5	16	8	9/24/94	10:55	0.56	16	8.2	170.7	100
1994	16-94	Forfar	N	N	9/23/94	11:45	0.18	24	8.2	9/24/94	12:45	0.18	24	9	62.7	100

year	sample	Aperture Collected %	C O L a	C O L i	E n t a	H y p a	I s o a	P o d a	O n d s a	S m a a	C O l	A m p i	D y t a	D y t l	A g a s i	H y g s a	D e s s a	H y d l	L a g a	R h y a	S t a a	T a c s i	
1994	70-94	100																					
1994	69-94	100																					
1994	50-94	100																					
1994	52-94	100																					
1994	79-94	100																					
1994	51-94	100																					
1994	53-94	100																					
1994	15-94	100																					
1994	18-94	100																					
1994	05-94	100																					
1994	29-94	100																					
1994	66-94	100																					
1994	67-94	100																					
1994	47-94	100															32						32
1994	14-94	100																					
1994	06-94	100																					
1994	30-94	100																					
1994	19-94	100																					
1994	17-94	100																					
1994	64-94	100																					
1994	68-94	100																					
1994	97-94	100																					
1994	01-94	100																					
1994	26-94	100																					
1994	08-94	100																					
1994	33-94	100																					
1994	36-94	100																					
1994	75-94	100																					
1994	74-94	75																					
1994	00-94	100																					
1994	03-94	100																					
1994	23-94	100																					
1994	22-94	100																					
1994	99-94	100																					
1994	98-94	100																					
1994	71-94	75																					
1994	12-94	69																					
1994	87-94	84																					
1994	11-94	100																					
1994	28-94	100																					
1994	38-94	100																					
1994	89-94	100																					
1994	61-94	93																					
1994	60-94	100																					
1994	43-94	75																					
1994	73-94	72																					
1994	09-94	100																					
1994	10-94	100																					
1994	37-94	88																					
1994	39-94	100																					
1994	94-94	88																					
1992	94-92	100																					
1994	93-94	100																					
1994	90-94	90																					
1994	16-94	100																					

100

year	sample	S c o o t t a	H e t P a	D I P a	D I P a	A g r i l	B i e l	<i>D</i> <i>i</i> <i>s</i>	B i b a	B o m a	C e r a	C e r l	F o r s	C h a a	C h a s	C h i a	C h i p	C h i l	A b i s	C a l	P h o c	C e a		
1994	70-94																			272				
1994	69-94																			192				
1994	50-94																		16	96				
1994	52-94																		8	120				
1994	79-94																			192				
1994	51-94																		16	120				
1994	53-94																			192				
1994	15-94																			160				
1994	18-94																			96				
1994	05-94																		8	728				
1994	29-94																		16	224				
1994	66-94																			416				
1994	67-94																		16	128				
1994	47-94																		96	416				
1994	14-94																		4	96				
1994	06-94																		16					
1994	30-94																			192				
1994	19-94																			16				
1994	17-94																			96				
1994	64-94																		16	112				
1994	68-94																		16	48	56			
1994	97-94																			80				
1994	01-94																			42				
1994	26-94																			40				
1994	08-94																			100				
1994	33-94																			16				
1994	36-94																			120				
1994	75-94																			60				
1994	74-94																		4	112				
1994	00-94																			80				
1994	03-94																			336				
1994	23-94																		4	20				
1994	22-94																			56				
1994	99-94																		8	42				
1994	98-94																			16	72			
1994	71-94																		4	2	52			
1994	12-94																		8	80				
1994	87-94																		8	56				
1994	11-94																			84				
1994	28-94																			80				
1994	38-94																		4	36				
1994	89-94																		8	32				
1994	61-94																							
1994	60-94																							
1994	43-94																			160				
1994	73-94																			32				
1994	09-94																			52				
1994	10-94																			192				
1994	37-94																			4				
1994	39-94																		16					
1994	94-94																			36				
1992	94-92																			256				
1994	93-94																		4	20				
1994	90-94																			28				
1994	16-94																			72				

year	sample	C u l a	C u l t	D e u s	D i x	D o l	D o l	E m p	E m p	E p p	M y c a l	M y c a p	M y c a l	M u s s l	P h o a	P u s a	P s y l	P r e s	P t y a	S c i a	S c i a	S i m p
------	--------	------------------	------------------	------------------	-------------	-------------	-------------	-------------	-------------	-------------	-----------------------	-----------------------	-----------------------	-----------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------	------------------

1994 70-94

1994 69-94

1994 50-94

1994 52-94

1994 79-94

1994 51-94

1994 53-94

1994 15-94

1994 18-94

1994 05-94

32 8

1994 29-94

1994 66-94

1994 67-94

1994 47-94

1994 14-94

1994 06-94

1994 30-94

1994 19-94

1994 17-94

1994 64-94

1994 68-94

1994 97-94

1994 01-94

1994 26-94

1994 08-94

1994 33-94

1994 36-94

1994 75-94

1994 74-94

1994 00-94

1994 03-94

1994 23-94

1994 22-94

1994 99-94

1994 98-94

1994 71-94

1994 12-94

1994 87-94

1994 11-94

1994 28-94

1994 38-94

1994 89-94

1994 61-94

1994 60-94

1994 43-94

1994 73-94

1994 09-94

1994 10-94 12

4

1994 37-94

1994 39-94

1994 94-94

1992 94-92

1994 93-94

1994 90-94

1994 16-94

16

year	sample	S i m m 1	C n e s s s a	P r o s s s i	P r o s s s a	T w i s s s l	T a b b a l	T a c p a	T i p p a	T i p s p	P r i s i	D i c s s	G o n s s	H e x s s	S t r a	S y r a	E P H	E P H	E P H	H e p n	C i n s n	E p e s n
1994	70-94	32																				
1994	69-94	32																				
1994	50-94								8													
1994	52-94									8												8
1994	79-94	32									32											32
1994	51-94	8																				
1994	53-94	16									48											16
1994	15-94																					
1994	18-94																					
1994	05-94																					136
1994	29-94																					32
1994	66-94								24													
1994	67-94																					32
1994	47-94									32												32
1994	14-94										4											4
1994	06-94											8										160
1994	30-94																					16
1994	19-94																					
1994	17-94																					
1994	64-94																					16
1994	68-94																					
1994	97-94																					
1994	01-94																					8
1994	26-94																					40
1994	08-94	4																				20
1994	33-94																					
1994	36-94	4																				
1994	75-94																					4
1994	74-94																					
1994	00-94																					
1994	03-94																					16
1994	23-94																					4
1994	22-94																					12
1994	99-94																					16
1994	98-94	8																				
1994	71-94	2																				14
1994	12-94	16						8														
1994	87-94																					
1994	11-94																					
1994	28-94																					4
1994	38-94	4																				4
1994	89-94																					8
1994	61-94																					
1994	60-94																					
1994	43-94																					32
1994	73-94	8																				8
1994	09-94																					6
1994	10-94																					
1994	37-94																					
1994	39-94																					
1994	94-94																					4
1992	94-92											4	4									4
1994	93-94																					
1994	90-94																					
1994	16-94																					

year	sample	S c e a	L E P p	L E P I	A r c i	N e p l	P y r l	P L E a	P L E n	P L E l	C a p a	P a r s a	N e m n	N e m i	P o d s n	Z a p s n	M a l s n	C h i n	K a t s n	U r a s n	A l i s n	P a r s n	
1994	70-94																		48				
1994	69-94																		16		16		
1994	50-94																						
1994	52-94																						
1994	79-94																						
1994	51-94																	8					
1994	53-94																	48					
1994	15-94																						
1994	18-94																						
1994	05-94																						8
1994	29-94																						
1994	66-94																						16
1994	67-94																						
1994	47-94																						32
1994	14-94																						8
1994	06-94																						8
1994	30-94																						32
1994	19-94																						
1994	17-94																						
1994	64-94																						
1994	68-94																						16
1994	97-94																						
1994	01-94																						
1994	26-94																						24
1994	08-94																						4
1994	33-94																						
1994	36-94																						
1994	75-94																						
1994	74-94																						4
1994	00-94																						
1994	03-94																						
1994	23-94																						
1994	22-94																						
1994	99-94																						
1994	98-94																	16					
1994	71-94																						6
1994	12-94																						
1994	87-94																						16
1994	11-94																						
1994	28-94																	8					
1994	38-94																						
1994	89-94																						
1994	61-94																						
1994	60-94																						
1994	43-94																	88					
1994	73-94																						
1994	09-94																						
1994	10-94																						
1994	37-94																						
1994	39-94																						
1994	94-94																						
1992	94-92																	16					
1994	93-94																						8
1994	90-94																						
1994	16-94																	20	6			60	

year	sample	Z Y G	I S O	M A L	I N a	I N n	I N p	I N I	A R e	A A a	N E M	N E M	O L I	P i s	G a s	B i v	D a p a	O S T	D I P	L o t a	T p	D d		
1994	70-94																					528	2.13	
1994	69-94																					432	1.07	
1994	50-94																					256	1.15	
1994	52-94																					328	1.63	
1994	79-94																					512	1.71	
1994	51-94																					296	1.02	
1994	53-94																					384	1.08	
1994	15-94																					363	1.07	
1994	18-94																					128	0.46	
1994	05-94																					1224	4.46	
1994	29-94																					496	2.72	
1994	66-94																					560	2.29	
1994	67-94																					240	0.98	
1994	47-94																					96	1152	4.18
1994	14-94																					160	0.53	
1994	06-94																					984	3.80	
1994	30-94																					496	2.56	
1994	19-94																					384	4.25	
1994	17-94																					224	1.13	
1994	64-94																					160	0.56	
1994	68-94																					360	1.22	
1994	97-94																					304	448	2.60
1994	01-94																					128	202	1.47
1994	26-94																					176	2.38	
1994	08-94																					564	12.00	
1994	33-94																					88	1.42	
1994	36-94																					144	1.79	
1994	75-94																					148	0.92	
1994	74-94																					236	1.15	
1994	00-94																					192	288	2.03
1994	03-94																					112	752	5.90
1994	23-94																					160	2.47	
1994	22-94																					165	2.76	
1994	99-94																					122	1.58	
1994	98-94																					256	1.83	
1994	71-94																					168	0.85	
1994	12-94																					56	428	4.30
1994	87-94																					176	528	5.03
1994	11-94																					4	104	3.10
1994	28-94																					40	148	8.86
1994	38-94																					96	2.19	
1994	89-94																					104	1.24	
1994	61-94																					0	0.00	
1994	60-94																					0	0.00	
1994	43-94																					840	9.88	
1994	73-94																					212	2.55	
1994	09-94																					6	92	2.39
1994	10-94																					12	276	15.00
1994	37-94																					20	0.46	
1994	39-94																					16	0.33	
1994	94-94																					21	141	0.48
1992	94-92																					24	400	2.45
1994	93-94																					156	324	4.46
1994	90-94																					68	172	1.01
1994	16-94																					20	212	3.38

year	sample	Creek	Site		Time mmddyy	Velocity m·s ⁻¹	Water Depth cm	Water Temp. °C	Date Collected mmddyy	Time h:m	Velocity m·s ⁻¹	Water Depth cm	Water Temp. °C	Volume m ³	Aperture Set %	
			North	South												
1994	25-94	Forfar	S	S	9/23/94	11:50	0.14	16	8.2	9/24/94	12:50	0.14	16	9	46.8	100
1994	91-94	Gluskie	N	N	9/23/94	11:15	0.45	18	7.5	9/24/94	11:25	0.45	18	8.2	151.6	100
1994	92-94	Gluskie	S	S	9/23/94	11:25	0.58	18	7.5	9/24/94	11:30	0.58	18	8.2	194.6	100
1994	45-94	O'Ne-eil	N	N	9/23/94	16:07	0.57	25	10	9/24/94	18:00	0.91	22	10	267.3	100
1994	72-94	O'Ne-eil	S	S	9/23/94	16:15	0.2	22	10	9/24/94	17:50	0.42	22	10	109.6	100
1994	86-94	Bivouac	S	S	9/24/94	10:45	0.21	18	8.2	9/25/94	10:35	0.18	19	9	63.2	100
1994	85-94	Bivouac	N	N	9/24/94	10:55	0.56	16	8.2	9/25/94	10:40	0.38	18	9	143.9	90
1994	20-94	Forfar	N	N	9/24/94	12:45	0.18	24	9	9/25/94	12:10	0.25	24	9	70.2	100
1994	32-94	Forfar	S	S	9/24/94	12:50	0.14	16	9	9/25/94	12:15	0.2	18	9	55.5	100
1994	34-94	Gluskie	N	N	9/24/94	11:25	0.45	18	8.2	9/25/94	11:20	0.42	18	9	145.5	100
1994	84-94	Gluskie	S	S	9/24/94	11:30	0.58	18	8.2	9/25/94	11:25	0.26	19	9	140	100
1994	63-94	O'Ne-eil	S	S	9/24/94	17:50	0.42	22	10	9/25/94	15:50	0.24	18	12	101.2	100
1994	41-94	O'Ne-eil	N	N	9/24/94	18:00	0.91	22	10	9/25/94	16:00	0.78	28	12	259.1	100

year	sample	S c o o r t a	H e t a	D I P a	D I P p	A g r i l	B i e l i	<i>D i o s s</i>	B i b i a	B o m a a	C e r a l	C e r a l	F o r s i	C h a a s a	C h a s a	C h i a	C h i p	A b l s i	C a l i	P h o a	C e c a
1994	25-94																	10			
1994	91-94																4	36			
1994	92-94																	40			
1994	45-94																	24			
1994	72-94															2	6				
1994	86-94																	20			
1994	85-94																	8			
1994	20-94																				
1994	32-94															4	36				
1994	34-94																4				
1994	84-94																	40			
1994	63-94																4	52			
1994	41-94																		52		

	C	C	D	D	D	D	E	E	M	M	M	M	P	P	P	P	S	S	S
	u	u	e	i	i	o	m	m	y	y	y	m	u	u	s	c	ci	si	
year	sample	a	l	l	/	a	l	a	p	c	c	s	h	o	y	ta	sa	ma	sp
1994	25-94																		
1994	91-94																		
1994	92-94																		
1994	45-94																		
1994	72-94																		
1994	86-94																		
1994	85-94																		
1994	20-94																		
1994	32-94																		
1994	34-94																		
1994	84-94																		
1994	63-94																		
1994	41-94																		

1994 25-94
 1994 91-94
 1994 92-94
 1994 45-94
 1994 72-94
 1994 86-94
 1994 85-94
 1994 20-94
 1994 32-94
 1994 34-94
 1994 84-94
 1994 63-94
 1994 41-94

	S	H	H	A	A	P	P	C	C	C	H	H	B	F	E	I	M	P
year	Sai	O	O	p	p	s	s	cic	cic	ce	Y	Y	r	or	u	ch	ym	la
sample	a	a	M	a	n	y	n	a	a	a	M	M	a	a	a	a	ma	a

1994 25-94

1994 91-94

1994 92-94

1994 45-94

1994 72-94

1994 86-94

1994 85-94

1994 20-94

1994 32-94

1994 34-94

4

1994 84-94

4

112

1994 63-94

60

1994 41-94

8

4

year	sample	S c e a	L E P p	L E P I	A r c i	N e p i	P y r i	P L E a	P L E n	P L E !	C a p a	P a r s a	N e m n	N e m l	P o d s n	Z a p s n	M a i s n	C h i n	K a t s n	U r a s n	A l l s n	P a r s n	
1994	25-94										2								48				
1994	91-94																						
1994	92-94																						
1994	45-94											64					32			24			
1994	72-94																4			12			
1994	86-94																						4
1994	85-94																4						
1994	20-94											24								120			
1994	32-94											40								324			
1994	34-94																						
1994	84-94																			12			
1994	63-94																			32			
1994	41-94																			12			

	G I o o year	G l o s sample	A n a s s	H y d l l	H e l d p	H y d l l	L i m l l	C h y s s	E c c s s	H o m s s	C l o s s	H e s s s	H y d s s	L e p s p	L e p s p	M o n l	P o l i	P h r l	P t i s p	S e r l	R h y a	R h y l	R h y s	H j m s	P s y	M E G
--	--------------------------	----------------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	------------------	------------------	------------------	-----------------------	------------------	------------------	------------------	------------------	------------------	-------------	-------------

1994 25-94

1994 91-94

1994 92-94

1994 45-94

1994 72-94

1994 86-94

4

1994 85-94

4

1994 20-94

1994 32-94

1994 34-94

1994 84-94

4

1994 63-94

1994 41-94

year	sample	Z Y G	I S O	M O L	I S a	I S n	I S p	I S I	A e a	A a a	N M M	N E M	O L I	P i s	G a s	B i V	D a p	O S T	D I P	L o t	T p	D d
1994	25-94													16							80	1.71
1994	91-94													4							80	0.53
1994	92-94													8							104	0.53
1994	45-94													32							216	0.81
1994	72-94																				44	0.40
1994	86-94															100					388	6.14
1994	85-94															100					320	2.22
1994	20-94														4						156	2.22
1994	32-94														52						464	8.36
1994	34-94																				128	0.88
1994	84-94														4						184	1.31
1994	63-94														4						124	1.23
1994	41-94														52						136	0.52

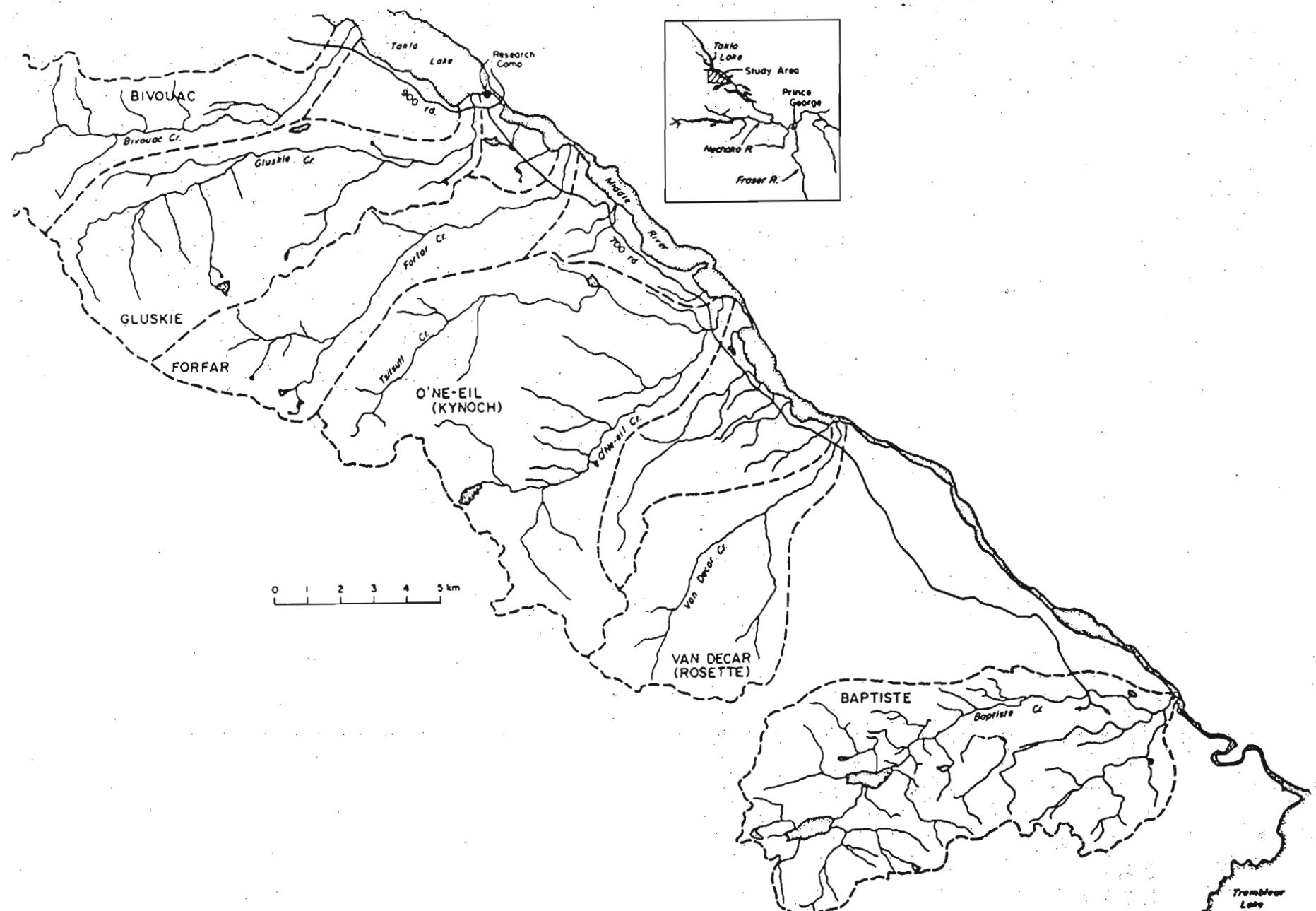


Fig. 1. Map of the study area showing the location of experimental tributaries in the Stuart-Takla watersheds basin.