ASSESSMENT OF CHANGES IN TOTAL PHOSPHORUS IN BURNS LAKE EAST & WEST BASINS, B.C: A PALEOLIMNOLOGICAL ASSESSMENT (MARCH 2005)

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BACKGROUND

Sediment cores were retrieved from Burns Lake with a modified K-B corer (internal diameter ~6.35 cm) on February 14th, 2002 by A.J. Downie, Ian Sharpe, Mark West and Ian Wilson. Two cores were retrieved, one from the east basin at approximately 18 meters depth that was 32 cm in length, and a second from the west basin at approximately 6 meters depth that was 44 cm in length. Samples were sectioned into 1.0 cm intervals, which were stored at the Ministry and later shipped to Queen's University where they were stored in our coldroom at 4 °C. All the samples were weighed to determine the total wet weight of sediment prior to subsampling for ^{210}Pb, loss-on-ignition and diatom analyses. Twenty intervals were subsampled for diatoms from each of the cores. For Burns East every one cm was sampled from 0 to 8.0 cm, then every two cm from 10 to 30 cm. For Burns West every two cm was sampled from 0 to 38.0 cm. Fifteen intervals were prepared for ^{210}Pb analysis (see below) for Burns East and seventeen for Burns West and then counted on the gamma counter facilities at PEARL, Queen's University.

METHODS

^{210}Pb Dating and Percent Organic Matter

The wet weight of the sediment was determined for all the subsections of the core that were shipped to Queen's. Nineteen samples for Burns East (an additional 4 samples from the original 15 for determination of percent water and organic matter analyses) were dried in the freeze drier at PEARL (24 hr. cycle). Twenty-two samples for Burns West (an additional 5 samples from the 17 for dating) were dried in the freeze drier at PEARL (24 hr. cycle). Dry weight of the sediment and percent water was determined. Dry sediment was then precisely weighed into a plastic tube for gamma spectroscopy for a total of 32 ^{210}Pb samples for the two cores. These samples were then sealed with epoxy and allowed to sit for two weeks in order for ^{214}Bi to equalize for determination of supported ^{210}Pb used in estimating core chronology. Activities of ^{210}Pb, ^{137}Cs and supported ^{210}Pb (via ^{214}Bi) were determined for each sample. These activities were then used to estimate the chronology of the core.

The activities (in disintegrations per minute/gram) of ^{210}Pb, ^{137}Cs and ^{214}Bi were determined using the procedures outlined in Schelske et al. (1994). These values were converted into picoCuries/gram for use in the Binford program (see below). Unsupported ^{210}Pb was calculated by subtracting supported ^{210}Pb (via ^{214}Bi counts from all samples within each of the cores) from the total ^{210}Pb activity at each level. The sediment chronology and sedimentation rates were calculated using the constant rate of supply (CRS) model (Appleby and Oldfield,, 1978) from the estimates of ^{210}Pb activities and estimates of cumulative dry mass (Binford, 1990). See Appendix B for a summary of ^{210}Pb calculations.

Percent organic matter was determined for nineteen samples from Burns East and twenty-two samples from Burns West, including the 32 that were ^{210}Pb dated (Appendix A) using standard loss-on-ignition (LOI) methods (Dean, 1974). Briefly, a known quantity of dried sediment (recorded to four decimal places) was heated to 550°C for 2 hours. The difference between the dry weight of the sediment and the weight of sediment remaining after ignition was used to estimate the percent of organic matter in each sediment sample.

Diatom Preparation and Enumeration

Slides for diatom analysis were prepared using standard techniques (Cumming et al. 1995). Briefly, a small amount of wet sediment was suspended in a 50:50 (molar) mixture of sulfuric and nitric acid in a 20-ml glass vial for 24 hr. prior to being submersed at 70°C in a warm water bath for approximately 5 hr. The remaining sediment material was settled for a period of 24 hr, at which time the acid above the sample was removed. The sample was rinsed with distilled water and allowed to settle once again for 24 hrs. The procedure was repeated approximately 8 times until the sample was acid free (litmus test). The samples were settled onto coverslips in a series of four 100% dilutions, which when dry, were mounted onto glass slides using a high-resolution mounting media called Naphrax®. For each sample, at least 400 diatom valves were enumerated with a Leica DMRB microscope equipped with DIC optics at 1000X magnification (Numerical Aperature of objective = 1.3). These analyses were based on the references of Krammer and Lange-Bertalot (1986, 1988, 1991a,b), Patrick and Reimer (1966, 1975) and Cumming et al. (1995).

Absolute abundance of diatoms was determined for all samples from the two cores using methods outlined in Battarbee & Kneen (1982). Absolute abundances were determined by spiking each of the diatom samples, prior to settling on coverslips, with a known concentration of microspheres. The microspheres were enumerated along with the diatoms and used to calculate estimates of # diatoms per gram dry weight. Total diatom concentration (#/g dry weight x 10^8) provides a means of assessing whether there were any changes in diatom production during the time period analyzed.

Diatom-based Reconstructions of Total Phosphorus

Inferences of total phosphorus from the diatom assemblages in the core are based on a phosphorus model developed from 268 freshwater lakes from across British Columbia. This dataset includes lakes from several regions within British Columbia. This model is based on estimates of the optima of taxa from weighted-averaging regression on non-transformed relative percentage data. Square-root transformed data provides similar model results. The coefficient of determination (r^2) of this model is 0.62, and the bootstrapped r^2 is 0.51. This model is superior to the earlier models developed by Reavie et al. (1995) for several reasons including its better predictive ability and the larger number of samples which provide more analogs for downcore reconstructions.

The total phosphorus inferences (Figs. 1E, 2E) were critically assessed to determine if they tracked the main direction of variation in the diatom species assemblages (Figs. 1D, 2D). If the diatom-based phosphorus reconstructions match the main direction of variation in the diatom assemblages in the core, then we can be fairly confident that the diatoms are tracking changes that are related to phosphorus. If the correlation between the main direction of variation and the diatom-inferred phosphorus values is weak or nonexistent, then other environmental variables (e.g. water depth, conductivity, turbulence, etc), or interactions between environmental variables, are likely responsible for the observed changes in diatom assemblages.

Determination of the Main Direction of Variation

The main direction of variation in the diatom assemblages in the two cores (Burns East & West) were determined from the first axis scores from a principal components analysis (PCA) ordination using non-transformed species abundance data (Figs. 1D, 2D). A PCA was chosen to represent the main direction of variation of the diatom assemblages in these cores based on the small gradient length (< 1.5 standard deviation units) obtained in an initial detrended correspondence analysis (DCA) ordination.

Cluster Analysis

Cluster analysis provides a means of grouping those samples that are most similar to each other. The program, TILIA and TGVIEW 2.02 (Grimm, unpublished), was used to provide a stratigraphic sequence (downcore) of the diatom assemblages and the cluster analyses. The cluster analyses were stratigraphical constrained in order to group the assemblages according to core depth (or core age) using non-transformed species data.

RESULTS AND DISCUSSION – Burns East

^{210}Pb Profile, Sedimentation Rates and Organic Matter

The ^{210}Pb activity of the Burns East core was very low and showed some diversions from an expected exponential decay with core depth (Fig. 1A). In particular, the top 6 cm of the profile indicates relatively stable activity, as opposed to an exponential decay, which suggests either an increase in sedimentation rate or mixing of the core profile. Calculation of sediment accumulation (Fig. 1B) does indicate an increase in the sedimentation rate since the late 1970s, along with a peak in the late 1950s to early 1960s. However, sedimentation rates are best estimated from several cores within a basin because sedimentation rates may vary across a basin. A fairly discrete ^{137}Cs peak suggests the core itself was not disturbed (Fig. 2B). A distinct peak in ^{137}Cs is a marker for 1963, since 1963 corresponds to the peak in atmospheric testing of nuclear weapons, and consequently fallout of isotopes such as ^{137}Cs. The measured ^{137}Cs peak in the Burns Lake East core occurs between 8-9 cm, which has an estimated ^{210}Pb date of 1959 to 1964 (see Appendix A), indicating a good match between ^{210}Pb and ^{137}Cs.

Analysis of organic matter (OM) from the core indicates relatively stable conditions ranging between 10 to 14%, indicating relatively inorganic sediment. There has been a slight and steady increase in percent organics since around the 1950s from approximately 11 to 14%. Increases in organic matter can be attributed to several factors including increased in-lake production of organic matter, increased inwash of organic matter, or decreases in the load of inorganic matter to the lake. However, a small increase of only 3% may only indicate the natural small decay of organics within the sediment core as opposed to any changes within the watershed.

Diatom Assemblage Changes and Analyses

One hundred thirty-five diatom taxa were documented in the core from Burns Lake East (Appendix C). However, the majority of these taxa are extremely rare. Taxa that were dominant during the past 250 years of the lake's history include the meso-eutrophic planktonics, *Aulacoseira subarctica*, and small *Stephanodiscus*, and the benthic *Fragilaria pinnata* (Fig. 3). Other sub-dominant taxa include the meso-eutrophic planktonics *Tabellaria flocculosa*, *Cyclotella bodanica var. lemanica*, *Fragilaria crotonensis*, and *Aulacoseira granulata* var. *angustissima*.

Cluster analysis suggests two major periods of diatom assemblages in the past 250 years (Fig. 3). In Zone A, representing the time period from approximately 1750 to 1950 AD, the diatom assemblage is comprised primarily of the benthic taxa, *Fragilaria construens* and *Fragilaria pinnata*, and the mesotrophic to slightly eutrohic planktonic taxa, *Cyclotella bodanica var. lemanica, Aulacoseira subarctica* and *Aulacoseira ambigua*. In Zone B, representing the time period from 1950 to 2002 AD, there are large increases in several more eutrophic planktonic taxa, *Stephanodiscus minutulus*, *Stephanodiscus parvus* and *Aulacoseira granulata* var. *angustissima*. All of these taxa have phosphorus optima greater than those that comprise much of the assemblage in Zone A. Other mesotrophic planktonics, *Tabellaria flocculosa* and *Fragilaria crotonensis*, also increase in abundance in Zone B.

Diatom-inferred total phosphorus (TP) estimates indicate mid-summer mesotrophic to eutrophic conditions that vary between 22 to 30 μgL^{-1} (Fig. 1E) during the past 250 years of the lake's history. In Zone A (1750-1950 AD), TP estimates vary between 20 to 24 μgL^{-1}, whereas in Zone B (1950-2002 AD) the TP estimates increase to 28 to 30 $\mu gL^{-}1$. The correlation between the main direction of variation in taxa (i.e. PCA axis 1 scores, Fig. 1D) and the log TP inferences is very high ($r = 0.95$) indicating that the changes seen in the diatom assemblages are consistent with the changes seen in the TP estimates. All dominant taxa, which are driving the reconstructions of TP, are well represented in our modern-day calibration set, thus providing evidence that the TP estimates are reliable.

Further evidence suggesting that Burns Lake East has become more eutrophic during the past 50 years is an approximately 12 fold increase in total diatom concentration from around $0.5x10^8$ diatoms/gram dry weight at the bottom of Zone A to around $6.0x10^8$ diatoms/gram dry weight at the top of Zone B (Fig. 3). Starting at the bottom of Zone B (circa 1950) there has been a steady increase in diatom concentration, suggesting that diatom productivity has increased within this basin.

RESULTS AND DISCUSSION – Burns West

<u>^{210}Pb Profile, Sedimentation Rates and Organic Matter</u>

The ^{210}Pb activity of the Burns West core was very low and showed some diversions from an expected exponential decay with core depth (Fig. 4A). In particular, the top approximately 10 cm of the profile indicates relatively stable activity with some diversions of lower activity, as opposed to an exponential decay, which suggests either an increase in sedimentation rate or mixing of the core profile. Calculation of sediment accumulation (Fig. 4B) does indicate a steady increase in the sedimentation rate since the 1950s. However, sedimentation rates are best estimated from several cores within a basin because sedimentation rates may vary across a basin. We can see this within Burns Lake, given that the more shallow west basin appears to have approximately double the sedimentation rate as in the deeper east basin (Figs. 1B and 4B, and Appendix A). A fairly discrete ^{137}Cs peak suggests the core itself was not disturbed (Fig. 5B). A distinct peak in ^{137}Cs is a marker for 1963, since 1963 corresponds to the peak in atmospheric testing of nuclear weapons, and consequently fallout of isotopes such as ^{137}Cs. The measured ^{137}Cs peak in the Burns Lake West core occurs between 11-14 cm, which has an estimated ^{210}Pb date of 1933 to 1962 (see Appendix A). Given the 3 cm gap in the dating profile we do not know exactly where the ^{137}Cs peak occurs, but likely more towards 11 cm. Thus the match between

^{210}Pb and ^{137}Cs is somewhat uncertain. The ^{210}Pb activity in the west basin is even lower than in the east basin, which suggests greater dating uncertainty in the west basin profile.

Analysis of organic matter (OM) from the core indicates relatively stable conditions ranging between 10 to 13%, indicating the sediments are predominantly inorganic. Around the estimated time of 1750 AD there is a small increase from approximately 10% to 12%, with further slight increases after the early 1950s, a similar timing to small increases in the east basin. Increases in organic matter can be attributed to several factors including increased in-lake production of organic matter, increased inwash of organic matter, or decreases in the load of inorganic matter to the lake. However, small increases of only 1 to 3% may only indicate the natural small decay of organics within the sediment core as opposed to any changes within the watershed.

Diatom Assemblage Changes and Analyses

One hundred thirty-nine diatom taxa were documented in the core from Burns Lake West (Appendix C). However, the majority of these taxa are extremely rare. Taxa that were dominant during the past 350 years of the lake's history include the small benthic *Fragilaria* species (*F. construens* and *F. pinnata*) and the meso-eutrophic planktonic, *Aulacoseira subarctica* (Fig. 6). Other sub-dominant taxa include the meso-eutrophic planktonics *Tabellaria flocculosa*, *Cyclotella bodanica var. lemanica*, *Fragilaria crotonensis*, *Aulacoseira ambigua*, *Aulacoseira granulata* var. *angustissim*a and small *Stephanodiscus*. The diatom assemblage is very similar to the east basin, except the small benthic *Fragilaria* taxa (*F. construens*, *F. brevistriata* and *F. pinnata*) comprise a greater percentage of the assemblage in the shallower west basin.

Cluster analysis suggests two major periods of diatom assemblages in the past 350 years (Fig. 6). In Zone A, representing the time period from approximately 1650 to 1930 AD, the diatom assemblage is comprised primarily of the benthic taxa, *Fragilaria construens* and *Fragilaria pinnata*, and the mesotrophic to slightly eutrohic planktonic taxa, *Cyclotella bodanica var. lemanica, Aulacoseira subarctica* and *Aulacoseira ambigua*. In Zone B, representing the time period from approximately 1930 to 2002 AD, there are distinct increases in several more eutrophic planktonic taxa, *Stephanodiscus minutulus*, *Stephanodiscus parvus* and *Aulacoseira granulata* var. *angustissim*a. All of these taxa have phosphorus optima greater than those that comprise much of the assemblage in Zone A. Other mesotrophic planktonics, *Tabellaria flocculosa* and *Fragilaria crotonensis*, also increase in abundance in Zone B. These patterns seen in Burns Lake West are the same ones seen in Burns Lake East, although the extent of the increase in the small *Stephanodiscus* is not as pronounced in the west basin as in the east basin.

Diatom-inferred total phosphorus (TP) estimates indicate mid-summer mesotrophic to eutrophic conditions that vary between 15 to 25 μgL^{-1} (Fig. 4E) during the past 350 years of the lake's history. In Zone A (1650-1930 AD), TP estimates vary between 15 to 19 μgL^{-1}, whereas in Zone B (1930-2002 AD) the TP estimates increase to 20 to 25 μgL^{-}1. The correlation between the main direction of variation in taxa (i.e. PCA axis 1 scores, Fig. 1D) and the log TP inferences is very high ($r = 0.97$) indicating that the changes seen in the diatom assemblages are consistent with the changes seen in the TP estimates. All dominant taxa, which are driving the reconstructions of TP, are well represented in our modern-day calibration set, thus providing evidence that the TP estimates are reliable.

In Burns West the diatom concentration remains relatively stable over the past approximately 350 years, indicating little change in total diatom productivity within this basin.

SUMMARY OF BURNS LAKE EAST AND WEST

In summary, the diatom-inferred TP levels of Burns Lake have increased over the past 50 to 70 years in comparison to pre-1900 levels. Results from Burns East suggests that this deeper basin has seen greater increases in TP levels (increasing from around 22 μgL^{-1} to 28-30 μgL^{-1}) and diatom productivity (12 fold increase in total diatom concentration) than in the shallower Burns West basin (increases from around 15-18 μgL^{-1} to 22-25 μgL^{-1}). Both basins had similar diatom taxa, which comprised the early assemblages (small benthic *Fragilaria* and *Aulacoseira subarctica*), and both basins showed increases in the same eutrophic planktonic taxa (small *Stephanodiscus* and *Aulacoseira granulata* var. *angustissima*). The shallower west basin's diatom assemblages were comprised of a greater percentage of the small *Fragilaria* benthics and did not show as large an increase in the small *Stephanodiscus*. The west basin did, however, show the same increase in *Aulacoseira granulata* var. *angustissima,* the taxa with the highest phosphorus optimum (44 μgL^{-1}) in these cores. The timing of this increase in the more eutrophic taxa varies somewhat in the two basins, ca. 1950 AD in the east and 1930 AD in the west. However, this difference may be due to more uncertainty in the west basin due to extremely low ^{210}Pb activities.

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FIGURE CAPTIONS

Figure 1. Summary diagram for Burns Lake East showing: A) total ^{210}Pb activity; B) the sediment accumulation rate; C) the change in the percent of organic matter in the core; D) the main direction of variation in the diatom assemblage data; and E) diatom-based estimated of late-summer total phosphorus.

Figure 2. ^{210}Pb profile and ^{137}Cs profile for Burns Lake East.

Figure 3. Stratigraphy of the most abundant diatom taxa found in the sediment core from Burns Lake East (see Appendix C-1 for a complete list of taxa and the relative percentage data). The diatom taxa are arranged in order of increasing late-summer total phosphorus (TP) optima. TP optima are show in parentheses.

Figure 4. Summary diagram for Burns Lake West showing: A) total ^{210}Pb activity; B) the sediment accumulation rate; C) the change in the percent of organic matter in the core; D) the main direction of variation in the diatom assemblage data; and E) diatom-based estimated of late-summer total phosphorus.

Figure 5. ^{210}Pb profile and ^{137}Cs profile for Burns Lake West.

Figure 6. Stratigraphy of the most abundant diatom taxa found in the sediment core from Burns Lake West (see Appendix C-2 for a complete list of taxa and the relative percentage data). The diatom taxa are arranged in order of increasing late-summer total phosphorus (TP) optima. TP optima are show in parentheses.

Burns Lake East

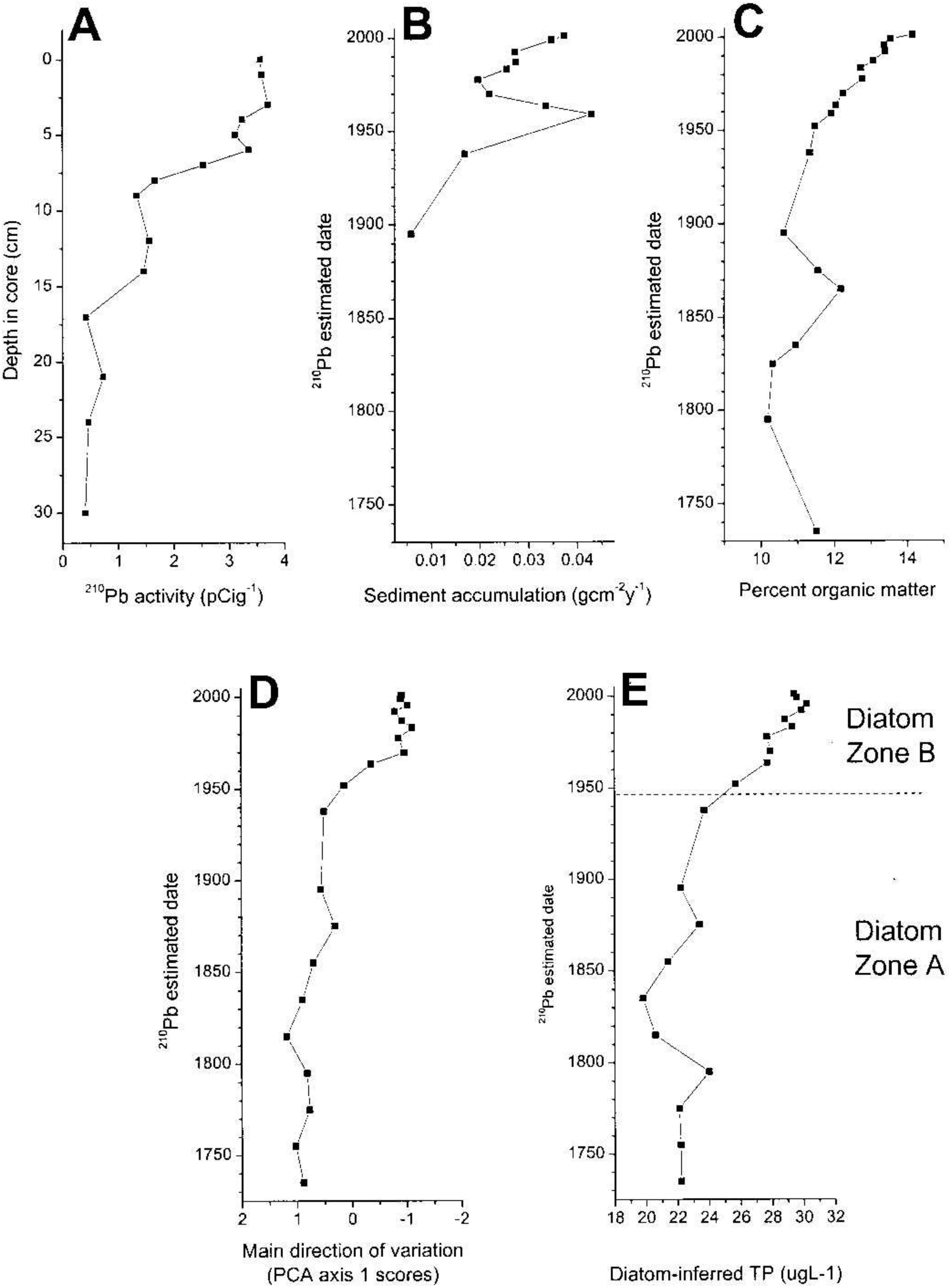


Fig. 2

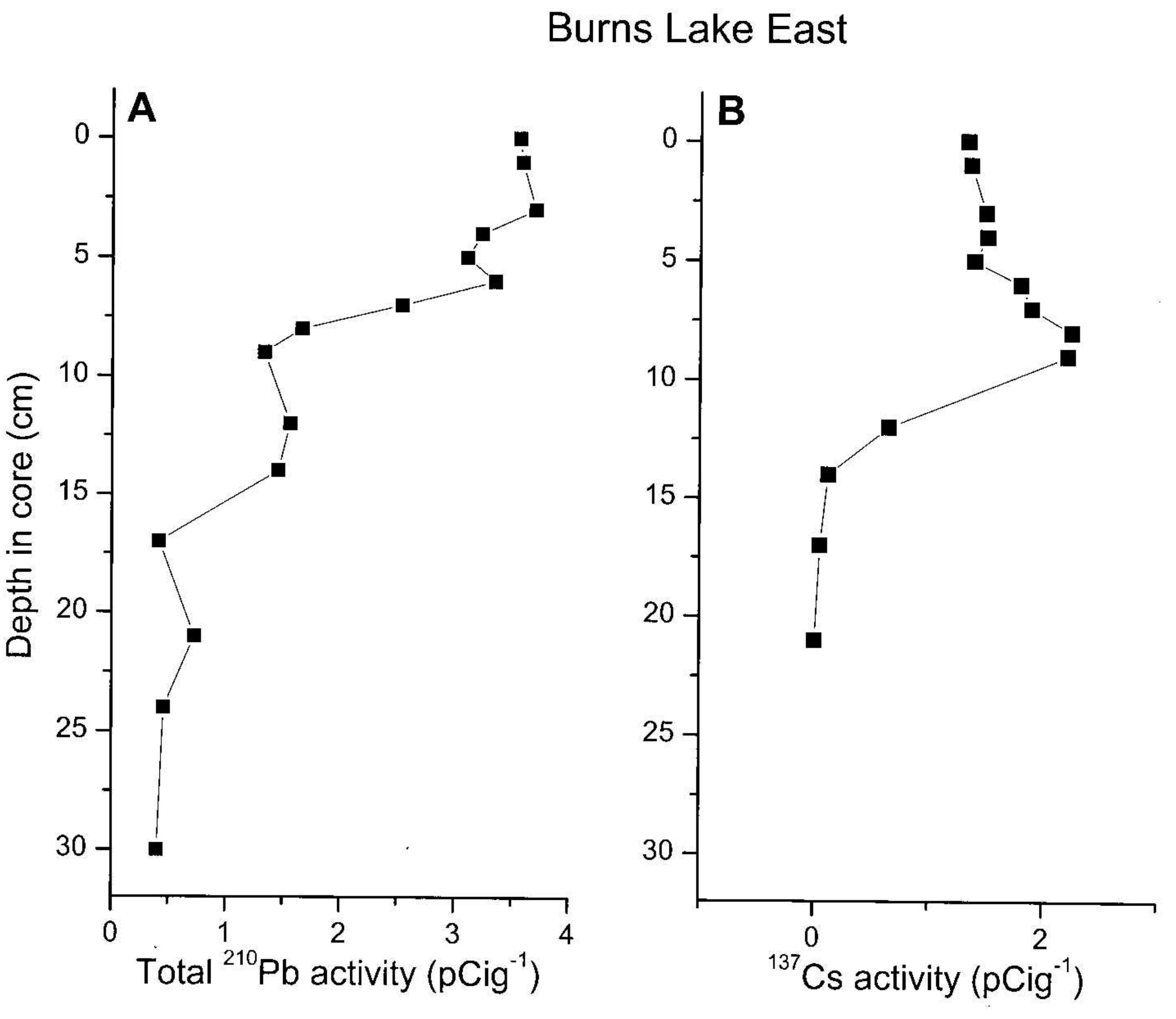

Burns Lake East
A
B
Depth in core (cm)
0
5
10
15
20
25
30
0
1
2
3
4
Total ^{210}Pb activity (pCig^{-1})
0
2
^{137}Cs activity (pCig^{-1})

FIG. 3

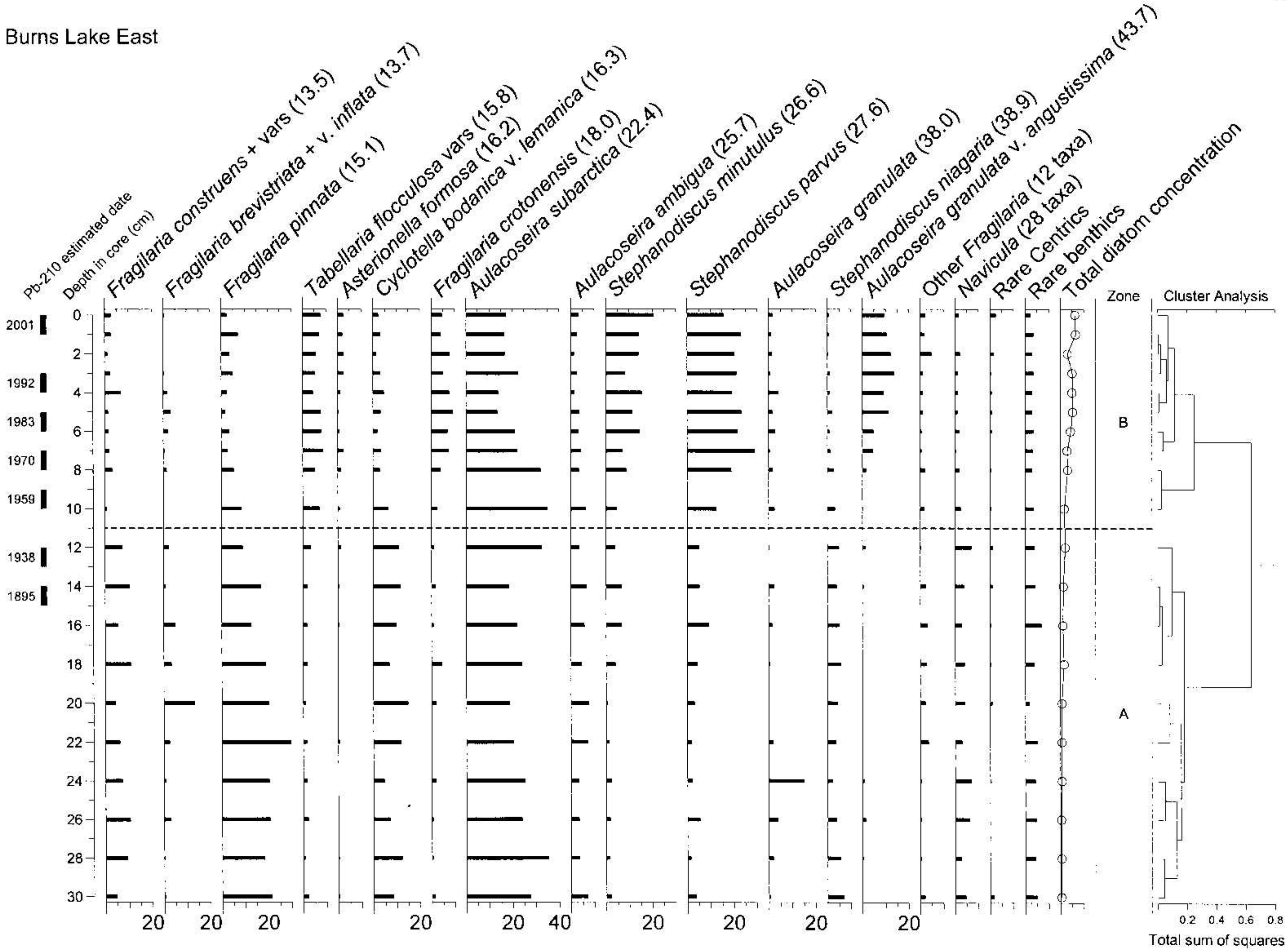

Burns Lake East
Pb-210 estimated date
Depth in core (cm)
Fragilaria construens + vars (13.5)
Fragilaria brevistriata + v. inflata (13.7)
Fragilaria pinnata (15.1)
Tabellaria flocculosa vars (15.8)
Asterionella formosa (16.2)
Cyclotella bodanica v. lemanica (16.3)
Fragilaria crotonensis (18.0)
Aulacoseira subarctica (22.4)
Aulacoseira ambigua (25.7)
Stephanodiscus minutulus (26.6)
Stephanodiscus parvus (27.6)
Aulacoseira granulata (38.0)
Stephanodiscus niagaria (38.9)
Aulacoseira granulata v. angustissima (43.7)
Other Fragilaria (12 taxa)
Navicula (28 taxa)
Rare Centrics
Rare benthics
Total diatom concentration
Zone
Cluster Analysis
2001
1992
1983
1970
1959
1938
1895
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
B
A
20 20 20 20 20 40 20 20 20 20
0.2 0.4 0.6 0.8
Total sum of squares

Fig. 4

Burns Lake West

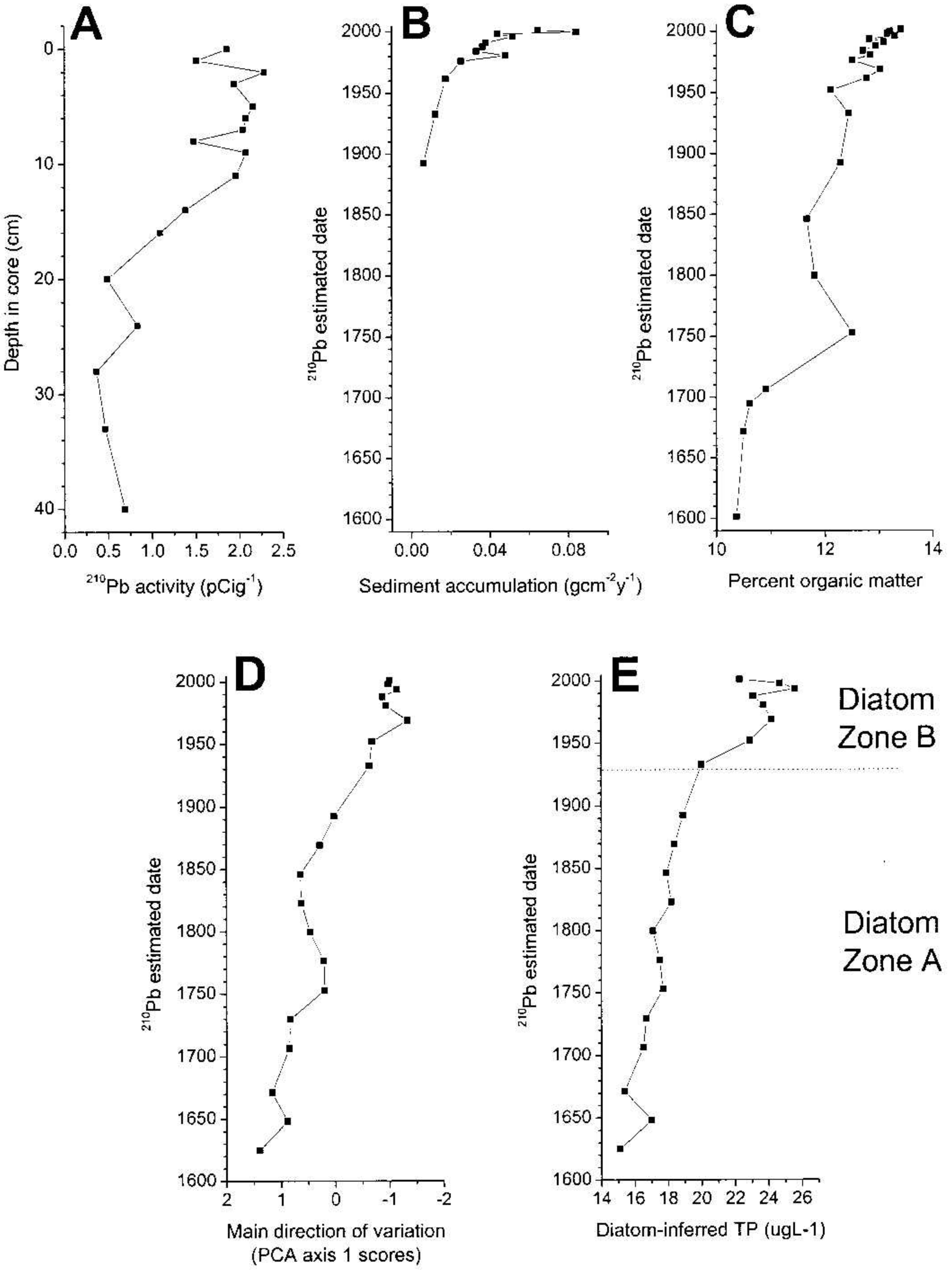


Fig. 5

Burns Lake West

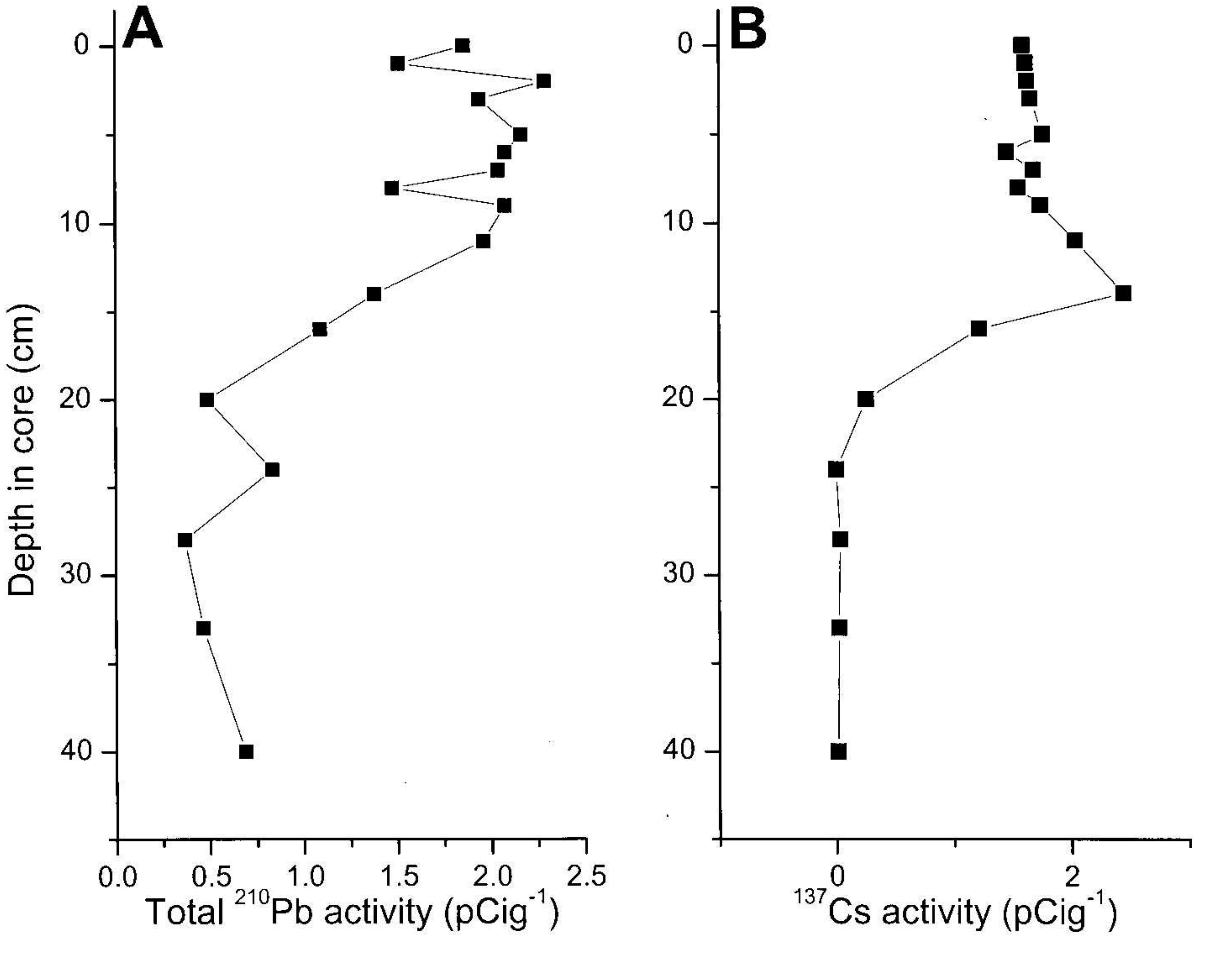
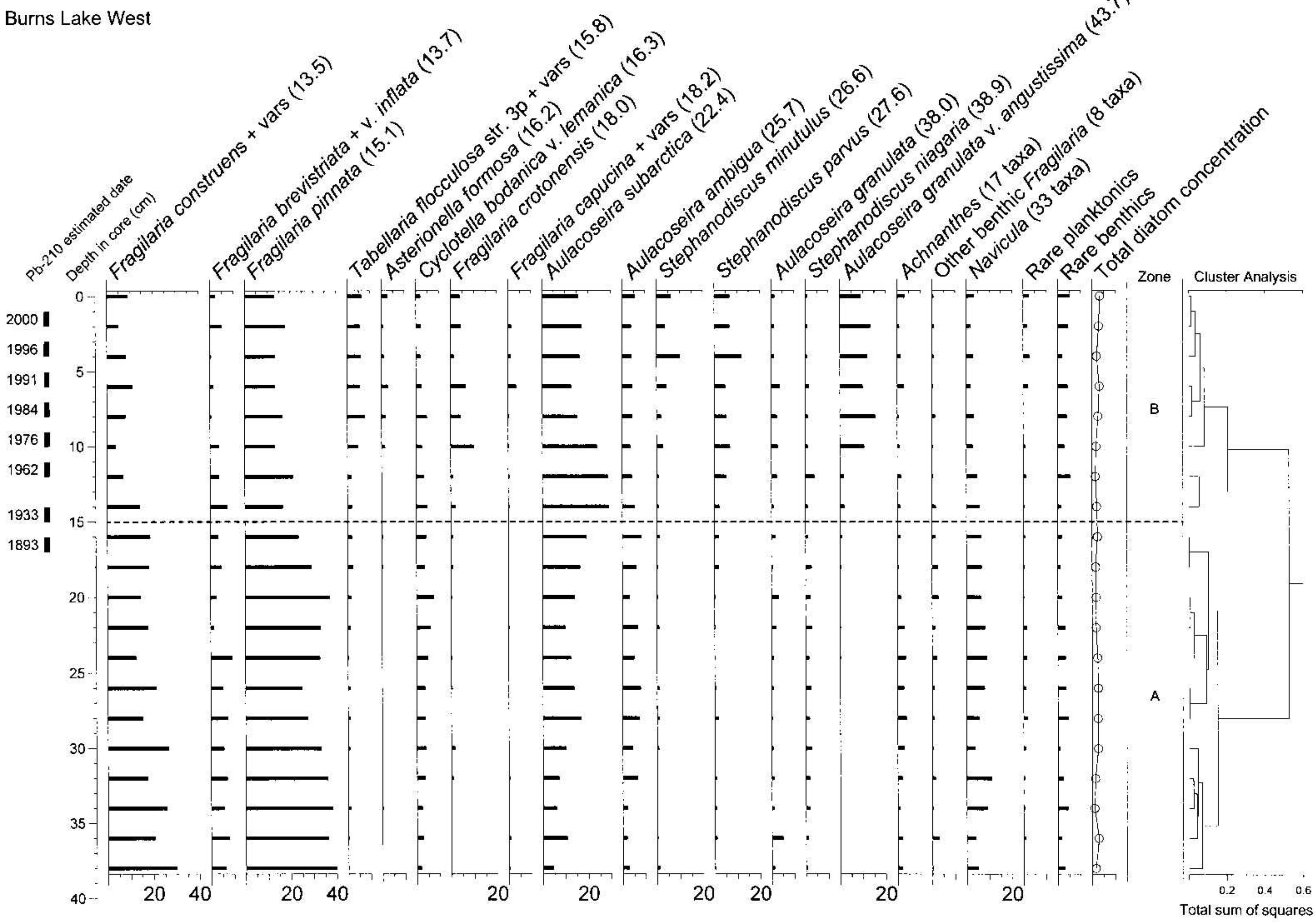


FIG. 6


Burns Lake West
Pb-210 estimated date
Depth in core (cm)
Fragilaria construens + vars (13.5)
Fragilaria brevistriata + v. inflata (13.7)
Fragilaria pinnata (15.1)
Tabellaria flocculosa str. 3p + vars (15.8)
Asterionella formosa (16.2)
Cyclotella bodanica v. lemanica (16.3)
Fragilaria crotonensis (18.0)
Fragilaria capucina + vars (18.2)
Aulacoseira subarctica (22.4)
Aulacoseira ambigua (25.7)
Stephanodiscus minutulus (26.6)
Stephanodiscus parvus (27.6)
Aulacoseira granulata (38.0)
Stephanodiscus niagaria (38.9)
Aulacoseira granulata v. angustissima (43.7)
Achnanthes (17 taxa)
Other benthic Fragilaria (8 taxa)
Navicula (33 taxa)
Rare planktonics
Rare benthics
Total diatom concentration
Zone
Cluster Analysis
2000
1996
1991
1984
1976
1962
1933
1893
B
A
Total sum of squares

Appendix A-1

Summary File Burns Lake East

Pb210 and LOI summary
* = extrapoloted dates

INTTOP (cm)	INTBOT (cm)	137Cs (pCig-1)	Pb210Act (pCi/g)	Time Top	Time Bottom	estimated AD date	SEDRATE (g/cm2/yr)
0	1	1.3368	3.5610	0.00	2.26	2001	0.0373
1	2	1.3619	3.5858	2.26	4.05	1999	0.0347
3	4	1.4934	3.7002	7.17	12.56	1992	0.0272
4	5	1.5067	3.2321	12.56	17.31	1987	0.0274
5	6	1.3935	3.1061	17.31	20.34	1983	0.0255
6	7	1.7999	3.3511	20.34	28.44	1978	0.0196
7	8	1.8955	2.5395	28.44	36.23	1970	0.0219
8	9	2.2491	1.6616	36.23	40.78	1964	0.0335
9	10	2.2143	1.3345	40.78	45.27	1959	0.0429
12	13	0.6558	1.5595	58.72	69.97	1938	0.0169
14	15	0.1241	1.4571	87.27	126.93	1895	0.0059
17	18	0.0535	0.4191				
21	22	0.0075	0.7272				
24	25	0.0000	0.4607				
30	31	0.0000	0.4008				

INTTOP (cm)	INTBOT (cm)	estimated AD date	LOI(550C) %organic
0	1	2001	14.12
1	2	1999	13.52
2	3	1996	13.35
3	4	1992	13.38
4	5	1987	13.04
5	6	1983	12.71
6	7	1978	12.75
7	8	1970	12.22
8	9	1964	12.02
9	10	1959	11.91
10	11	1952	11.45
12	13	1938	11.32
14	15	1895	10.61
16	17	*1875	11.55
17	18	*1865	12.17
20	21	*1835	10.95
21	22	*1825	10.31
24	25	*1795	10.18
30	31	*1735	11.50

Diatom analyses

Depth (cm TOP	Depth (cm BOTTOM	estimated AD date	TP	PCA Axis 1	Diatom co (#/g dry w
0	1	2001	29.4	-0.911	6.11
1	2	1999	29.6	-0.897	6.43
2	3	1996	30.2	-1.022	2.94
3	4	1992	29.9	-0.784	5.02
4	5	1987	28.8	-0.920	4.93
5	6	1983	29.3	-1.101	5.17
6	7	1978	27.7	-0.858	4.33
7	8	1970	27.9	-0.959	2.82
8	9	1964	27.7	-0.349	3.04
10	11	1952	25.7	0.137	1.63
12	13	1938	23.7	0.504	2.01
14	15	1895	22.2	0.560	1.18
16	17	*1875	23.4	0.309	0.98
18	19	*1855	21.4	0.701	1.49
20	21	*1835	19.8	0.901	0.60
22	23	*1815	20.6	1.185	0.57
24	25	*1795	24.0	0.818	0.59
26	27	*1775	22.1	0.772	0.30
28	29	*1755	22.2	1.026	0.50
30	31	*1735	22.2	0.887	0.40

A-2

Summary File Burns Lake West

Pb210 and LOI summary
* = extrapoloted dates

INTTOP (cm)	INTBOT (cm)	137Cs (pCig-1)	Pb210Act (pCi/g)	Time (yr BP) Top	Time (yr BP) Bottom	estimated AD date	SEDRATE (g/cm2/yr)
0	1	1.5846	1.8549	0.00	1.80	2001	0.0645
1	2	1.6102	1.5111	1.80	2.99	2000	0.0838
2	3	1.6241	2.2848	2.99	4.93	1998	0.0440
3	4	1.6530	1.9378	4.93	7.14	1996	0.0517
5	6	1.7605	2.1590	9.67	12.58	1991	0.0380
6	7	1.4508	2.0745	12.58	16.16	1988	0.0363
7	8	1.6773	2.0389	16.16	20.04	1984	0.0331
8	9	1.5499	1.4781	20.04	22.88	1981	0.0480
9	10	1.7377	2.0752	22.88	29.31	1976	0.0253
11	12	2.0366	1.9607	36.44	44.52	1962	0.0175
14	15	2.4487	1.3818	63.54	75.41	1933	0.0122
16	17	1.2175	1.0902	92.57	126.51	1893	0.0061
20	21	0.2559	0.4890				
24	25	0.0003	0.8331				
28	29	0.0336	0.3679				
33	34	0.0224	0.4655				
40	41	0.0160	0.6879				

INTTOP (cm)	INTBOT (cm)	estimated AD date	LOI(550C) %organic
0	1	2001	13.40
1	2	2000	13.19
2	3	1998	13.15
3	4	1996	13.29
4	5	1994	12.81
5	6	1991	13.08
6	7	1988	12.92
7	8	1984	12.69
8	9	1981	12.83
9	10	1976	12.49
10	11	1969	13.01
11	12	1962	12.76
12	13	1952	12.09
14	15	1933	12.43
16	17	1893	12.27
20	21	*1846	11.66
24	25	*1800	11.80
28	29	*1753	12.49
32	33	*1706	10.91
33	34	*1695	10.61
34	35	*1671	10.49
40	41	*1602	10.37

Diatom analyses

Depth (cm TOP	Depth (cm BOTTOM	estimated AD date	TP	PCA Axis 1	Diatom co (#/g dry w
0	1	2001	22.3	-1.004	3.29
2	3	1998	24.7	-0.980	2.85
4	5	1994	25.6	-1.142	1.98
6	7	1988	23.1	-0.869	3.12
8	9	1981	23.7	-0.936	2.51
10	11	1969	24.2	-1.334	1.64
12	13	1952	22.9	-0.680	1.39
14	15	1933	20.0	-0.629	1.96
16	17	1893	18.9	0.019	2.26
18	19	*1869	18.4	0.285	1.46
20	21	*1846	17.9	0.646	1.68
22	23	*1823	18.2	0.627	1.69
24	25	*1800	17.1	0.468	2.34
26	27	*1776	17.5	0.212	2.54
28	29	*1753	17.7	0.196	2.49
30	31	*1730	16.7	0.832	2.63
32	33	*1706	16.5	0.851	1.30
34	35	*1671	15.4	1.168	0.94
36	37	*1648	17.0	0.879	2.78
38	39	*1625	15.1	1.391	1.48

Appendix B-1

Burns Lake - East ROI - 210Pb- Counter-92X **Cored Feb 14, 2002** **GAMMA COUNTER DATA**

Top Int (cm)	Bot Int (cm)	Mid pt	Date counted	counting ti (s)	mass g/dry wt	hieght in tube (mm)	Bkgr ROI1	210-Pb ROI2	Bkgr ROI3	Bkgr ROI4	226-Ra ROI5	Bkgr ROI6	Bkgr ROI7	137-Cs ROI8	Bkgr ROI9
0	1	0.5	8 Mar 04	86951	1.623	38.42	478	1353	415	154	455	134	115	826	125
1	2	1.5	9 Mar 04	83980	1.6953	35.46	405	1344	427	138	454	144	109	839	104
3	4	3.5	10 Mar 04	82382	1.6858	32.61	406	1335	388	141	438	131	106	908	108
4	5	4.5	11 Mar 04	85783	1.6812	33.73	459	1372	429	140	487	134	123	948	108
5	6	5.5	12 Mar 04	90959	1.684	33.1	463	1432	469	134	484	139	145	964	109
6	7	6.5	13 Mar 04	83347	1.6836	32.22	430	1307	377	122	440	119	111	1074	114
7	8	7.5	14 Mar 04	81461	1.686	30.74	451	1244	409	116	431	163	105	1100	104
8	9	8.5	15 Mar 04	85611	1.8207	31.74	455	1204	464	147	464	145	101	1399	113
9	10	9.5	16 Mar 04	86422	1.8208	30.55	437	1135	459	131	463	145	106	1406	105
12	13	12.5	18 Mar 04	86212	1.8978	31.4	463	1152	407	130	460	135	121	587	101
14	15	14.5	19 Mar 04	99986	2.05	30.05	484	1291	472	161	572	142	135	339	115
17	18	17.5	20 Mar 04	82305	1.9048	30.15	437	943	419	147	496	111	111	243	102
21	22	21.5	20 Feb 04	95513	2.3254	30.66	546	1229	496	140	630	151	122	259	130
24	25	24.5	21 Mar 04	84011	2.4174	32.16	492	1043	439	130	495	133	127	221	101
30	31	30.5	22 Mar 04	80559	2.2347	30.64	447	959	420	137	510	122	124	216	93

Lake Name	Midpoint	corrected for efficiency & density **210Pb (dpm/g)**	**214Bi (dpm/g)**	corrected for sampling date **137Cs (dpm/g)**	210Pb error 1 std. dev. (dpm/g)	214Bi error 1 std. dev. (dpm/g)	137Cs error 1 std. dev. (dpm/g)	corrected for efficiency & density **210Pb (dps/g)**	**214Bi (dps/g)**	corrected for sampling date **137Cs (dps/g)**	210Pb error 1 std. dev. **(dps/g)**	214Bi error 1 std. dev. **(dps/g)**	137Cs error 1 std. dev. **(dps/g)**
Burns E	0.5	7.91	1.88	2.97	0.369	0.145	0.123	0.1318	0.0313	0.0495	0.0061	0.0024	0.0020
Burns E	1.5	7.96	1.28	3.02	0.352	0.097	0.121	0.1327	0.0213	0.0504	0.0059	0.0016	0.0020
Burns E	3.5	8.21	1.21	3.32	0.353	0.094	0.126	0.1369	0.0202	0.0553	0.0059	0.0016	0.0021
Burns E	4.5	7.18	1.65	3.34	0.326	0.113	0.125	0.1196	0.0275	0.0557	0.0054	0.0019	0.0021
Burns E	5.5	6.90	1.49	3.09	0.308	0.102	0.116	0.1149	0.0248	0.0516	0.0051	0.0017	0.0019
Burns E	6.5	7.44	1.53	4.00	0.333	0.109	0.137	0.1240	0.0255	0.0666	0.0055	0.0018	0.0023
Burns E	7.5	5.64	1.06	4.21	0.288	0.086	0.141	0.0940	0.0176	0.0701	0.0048	0.0014	0.0023
Burns E	8.5	3.69	1.10	4.99	0.219	0.084	0.145	0.0615	0.0184	0.0832	0.0036	0.0014	0.0024
Burns E	9.5	2.96	1.21	4.92	0.192	0.089	0.142	0.0494	0.0202	0.0819	0.0032	0.0015	0.0024
Burns E	12.5	3.46	1.25	1.46	0.206	0.089	0.076	0.0577	0.0208	0.0243	0.0034	0.0015	0.0013
Burns E	14.5	3.23	1.44	0.28	0.177	0.088	0.029	0.0539	0.0240	0.0046	0.0029	0.0015	0.0005
Burns E	17.5	0.93	1.70	0.12	0.100	0.110	0.022	0.0155	0.0284	0.0020	0.0017	0.0018	0.0004
Burns E	21.5	1.61	1.81	0.02	0.118	0.098	0.006	0.0269	0.0302	0.0003	0.0020	0.0016	0.0001
Burns E	24.5	1.02	1.29	-0.03	0.097	0.085	0.010	0.0170	0.0216	-0.0004	0.0016	0.0014	0.0002
Burns E	30.5	0.89	1.60	-0.01	0.093	0.101	0.007	0.0148	0.0267	-0.0001	0.0015	0.0017	0.0001

Burns Lake East - Pb210

CALCULATIONS FOR INPUT INTO BINFORD PROGRAM

1 dps= 1Becquerrel

INTTOP (cm)	INTBOT (cm)	Pb-210 (dps/g) activity	Std dev Pb-210 (dps/g)	214Bi (dps/g)	137Cs (dps/g)	137Cs (pCig-1)	Pb210 activity (pCig-1)	Std dev Pb-210 (pCig-1)	214Bi (pCig-1)	Rho (g cm-3)
0	1	0.1318	0.0061	0.0313	0.0495	1.3368	3.5610	0.1660	0.8462	0.0844
1	2	0.1327	0.0059	0.0213	0.0504	1.3619	3.5858	0.1585	0.5749	0.0620
3	4	0.1369	0.0059	0.0202	0.0553	1.4934	3.7002	0.1591	0.5453	0.1463
4	5	0.1196	0.0054	0.0275	0.0557	1.5067	3.2321	0.1469	0.7420	0.1299
5	6	0.1149	0.0051	0.0248	0.0516	1.3935	3.1061	0.1389	0.6703	0.0771
6	7	0.1240	0.0055	0.0255	0.0666	1.7999	3.3511	0.1499	0.6901	0.1581
7	8	0.0940	0.0048	0.0176	0.0701	1.8955	2.5395	0.1296	0.4758	0.1696
8	9	0.0615	0.0036	0.0184	0.0832	2.2491	1.6616	0.0984	0.4976	0.1520
9	10	0.0494	0.0032	0.0202	0.0819	2.2143	1.3345	0.0863	0.5458	0.1922
12	13	0.0577	0.0034	0.0208	0.0243	0.6558	1.5595	0.0929	0.5628	0.1877
14	15	0.0539	0.0029	0.0240	0.0046	0.1241	1.4571	0.0796	0.6478	0.2086
17	18	0.0155	0.0017	0.0284	0.0020	0.0535	0.4191	0.0449	0.7663	0.1680
21	22	0.0269	0.0020	0.0302	0.0003	0.0075	0.7272	0.0532	0.8153	0.2171
24	25	0.0170	0.0016	0.0216	-0.0004	0.0000	0.4607	0.0435	0.5826	0.2490
30	31	0.0148	0.0015	0.0267	-0.0001	0.0000	0.4008	0.0418	0.7221	0.2074

Supported 0.645672
std 0.115861

BINFORD FILE INPUTS FOR CALCULATIONS OF DATES AND SEDIMENTATION RATES

Burns East
C1
15.00
0.115861

INTTOP (cm)	INTBOT (cm)	Pb210 Total (pCig-1)	Pb210 Unsup. (pCig-1)	Rho (g cm-3)	OM proportion	CUMTOP (g cm-2)	CUMBOT (g cm-2)	std Pb210 (pCig-1)
0	1	3.5610	2.9153	0.0844	0.141158	0.0000	0.0844	0.1660
1	2	3.5858	2.9401	0.0620	0.135187	0.0844	0.1463	0.1585
3	4	3.7002	3.0546	0.1463	0.133761	0.2545	0.4008	0.1591
4	5	3.2321	2.5864	0.1299	0.130394	0.4008	0.5307	0.1469
5	6	3.1061	2.4604	0.0771	0.127074	0.5307	0.6078	0.1389
6	7	3.3511	2.7054	0.1581	0.127495	0.6078	0.7659	0.1499
7	8	2.5395	1.8938	0.1696	0.1222	0.7659	0.9355	0.1296
8	9	1.6616	1.0159	0.1520	0.120162	0.9355	1.0875	0.0984
9	10	1.3345	0.6889	0.1922	0.11907	1.0875	1.2797	0.0863
12	13	1.5595	0.9138	0.1877	0.113173	1.6643	1.8520	0.0929
14	15	1.4571	0.8114	0.2086	0.106135	2.0496	2.2583	0.0796
17	18	0.4191	0.0000	0.1680	0.121724	2.7548	2.9228	0.0449
21	22	0.7272	0.0000	0.2171	0.10312	3.5716	3.7886	0.0532
24	25	0.4607	0.0000	0.2490	0.101782	4.1699	4.4189	0.0435
30	31	0.4008	0.0000	0.2074	0.115048	5.5347	5.7421	0.0418

Burns Lake - West **ROI - 210Pb - Counter-92X** **Cored Feb. 14, 2002** **GAMMA COUNTER DATA**

Top Int (cm)	Bot Int (cm)	Mid pt	Date counted	counting ti (s)	mass g/dry wt	hieght in tube (mm)	Bkgr ROI1	210-Pb ROI2	Bkgr ROI3	Bkgr ROI4	226-Ra ROI5	Bkgr ROI6	Bkgr ROI7	137-Cs ROI8	Bkgr ROI9
0	1	0.5	16 Feb 04	83170	2.0412	34.12	413	1183	443	126	405	129	113	1107	111
1	2	1.5	17 Feb 04	87172	2.0032	35.23	495	1184	416	127	468	114	104	1122	108
2	3	2.5	19 Feb 04	86947	1.9841	36.33	478	1278	409	151	482	118	121	1136	121
3	4	3.5	21 Feb 04	82666	1.9902	36.84	462	1200	422	126	436	112	113	1083	108
5	6	5.5	22 Feb 04	80919	2.0036	36.47	440	1183	396	145	420	130	103	1096	84
6	7	6.5	23 Feb 04	87085	2.0106	36.11	455	1253	435	138	461	147	127	1064	124
7	8	7.5	24 Feb 04	85217	1.9917	36.19	453	1209	410	138	448	111	111	1117	96
8	9	8.5	25 Feb 04	81270	2.0008	34.05	449	1096	393	112	401	111	112	1036	96
9	10	9.5	26 Feb 04	85746	1.9885	35.79	422	1193	415	132	455	119	115	1182	115
11	12	11.5	28 Feb 04	88304	1.9928	35.81	458	1294	488	122	468	136	112	1381	118
14	15	14.5	29 Feb 04	81890	2.1505	34.78	411	1072	408	124	434	128	114	1602	85
16	17	16.5	1 Mar 04	85289	2.1855	34.13	470	1129	442	149	551	114	106	983	132
20	21	20.5	2 Mar 04	87190	2.1924	34.87	502	1044	433	124	481	132	115	389	114
24	25	24.5	4 Mar 04	87067	2.2071	34.19	451	1029	403	128	461	120	128	249	121
28	29	28.5	5 Mar 04	81282	2.139	35.2	453	958	426	144	445	140	97	232	115
33	34	33.5	6 Mar 04	84624	2.395	34.09	464	977	403	145	488	139	118	241	107
40	41	40.5	7 Mar 04	81308	2.3839	35.95	455	993	395	139	469	137	121	223	91

Lake Name	Midpoint	corrected for efficiency & density **210Pb (dpm/g)**	**214Bi (dpm/g)**	corrected for sampling date **137Cs (dpm/g)**	210Pb error 1 std. dev. (dpm/g)	214Bi error 1 std. dev. (dpm/g)	137Cs error 1 std. dev. (dpm/g)	corrected for efficiency & density **210Pb (dps/g)**	**214Bi (dps/g)**	corrected for sampling date **137Cs (dps/g)**	210Pb error 1 std. dev. (dps/g)	214Bi error 1 std. dev. (dps/g)	137Cs error 1 std. dev. (dps/g)
Burns W	0.5	4.12	0.86	3.52	0.228	0.070	0.118	0.0686	0.0144	0.0586	0.0038	0.0012	0.0020
Burns W	1.5	3.35	1.50	3.57	0.203	0.100	0.118	0.0559	0.0250	0.0596	0.0034	0.0017	0.0020
Burns W	2.5	5.07	1.42	3.61	0.257	0.097	0.121	0.0845	0.0236	0.0601	0.0043	0.0016	0.0020
Burns W	3.5	4.30	1.38	3.67	0.242	0.098	0.125	0.0717	0.0230	0.0612	0.0040	0.0016	0.0021
Burns W	5.5	4.79	0.90	3.91	0.257	0.074	0.130	0.0799	0.0149	0.0651	0.0043	0.0012	0.0022
Burns W	6.5	4.61	1.06	3.22	0.242	0.080	0.113	0.0768	0.0177	0.0537	0.0040	0.0013	0.0019
Burns W	7.5	4.53	1.32	3.72	0.243	0.093	0.123	0.0754	0.0220	0.0621	0.0041	0.0016	0.0021
Burns W	8.5	3.28	1.17	3.44	0.206	0.088	0.120	0.0547	0.0195	0.0573	0.0034	0.0015	0.0020
Burns W	9.5	4.61	1.35	3.86	0.244	0.094	0.125	0.0768	0.0225	0.0643	0.0041	0.0016	0.0021
Burns W	11.5	4.35	1.34	4.52	0.233	0.093	0.133	0.0725	0.0224	0.0754	0.0039	0.0015	0.0022
Burns W	14.5	3.07	1.12	5.44	0.193	0.083	0.145	0.0511	0.0187	0.0906	0.0032	0.0014	0.0024
Burns W	16.5	2.42	1.89	2.70	0.164	0.111	0.099	0.0403	0.0315	0.0450	0.0027	0.0019	0.0017
Burns W	20.5	1.09	1.35	0.57	0.104	0.090	0.045	0.0181	0.0225	0.0095	0.0017	0.0015	0.0007
Burns W	24.5	1.85	1.24	-0.00	0.140	0.085	0.001	0.0308	0.0206	-0.0000	0.0023	0.0014	0.0000
Burns W	28.5	0.82	0.96	0.07	0.092	0.076	0.017	0.0136	0.0160	0.0012	0.0015	0.0013	0.0003
Burns W	33.5	1.03	1.12	0.05	0.099	0.078	0.012	0.0172	0.0186	0.0008	0.0016	0.0013	0.0002
Burns W	40.5	1.53	1.12	0.04	0.128	0.081	0.011	0.0255	0.0187	0.0006	0.0021	0.0013	0.0002

B-4

Burns Lake West - Pb210

CALCULATIONS FOR INPUT INTO BINFORD PROGRAM

1 dps= 1Becquerrel

INTTOP (cm)	INTBOT (cm)	Pb-210 (dps/g) activity	Std dev Pb-210 (dps/g)	214Bi (dps/g)	137Cs (dps/g)	137Cs (pCig-1)	Pb210 activity (pCig-1)	Std dev Pb-210 (pCig-1)	214Bi (pCig-1)	Rho (g cm-3)
0	1	0.0686	0.0038	0.0144	0.0586	1.5846	1.8549	0.1026	0.3885	0.1164
1	2	0.0559	0.0034	0.0250	0.0596	1.6102	1.5111	0.0915	0.6758	0.0994
2	3	0.0845	0.0043	0.0236	0.0601	1.6241	2.2848	0.1155	0.6375	0.0855
3	4	0.0717	0.0040	0.0230	0.0612	1.6530	1.9378	0.1090	0.6204	0.1142
5	6	0.0799	0.0043	0.0149	0.0651	1.7605	2.1590	0.1159	0.4034	0.1106
6	7	0.0768	0.0040	0.0177	0.0537	1.4508	2.0745	0.1089	0.4793	0.1302
7	8	0.0754	0.0041	0.0220	0.0621	1.6773	2.0389	0.1096	0.5940	0.1281
8	9	0.0547	0.0034	0.0195	0.0573	1.5499	1.4781	0.0927	0.5268	0.1364
9	10	0.0768	0.0041	0.0225	0.0643	1.7377	2.0752	0.1100	0.6073	0.1620
11	12	0.0725	0.0039	0.0224	0.0754	2.0366	1.9607	0.1051	0.6058	0.1408
14	15	0.0511	0.0032	0.0187	0.0906	2.4487	1.3818	0.0869	0.5048	0.1433
16	17	0.0403	0.0027	0.0315	0.0450	1.2175	1.0902	0.0740	0.8507	0.1898
20	21	0.0181	0.0017	0.0225	0.0095	0.2559	0.4890	0.0468	0.6074	0.1475
24	25	0.0308	0.0023	0.0206	-0.0000	0.0003	0.8331	0.0630	0.5571	0.2250
28	29	0.0136	0.0015	0.0160	0.0012	0.0336	0.3679	0.0414	0.4326	0.1707
33	34	0.0172	0.0016	0.0186	0.0008	0.0224	0.4655	0.0444	0.5027	0.2886
40	41	0.0255	0.0021	0.0187	0.0006	0.0160	0.6879	0.0575	0.5060	0.2695

Supported 0.558828
Std dev 0.112459

BINFORD FILE INPUTS FOR CALCULATIONS OF DATES AND SEDIMENTATION RATES

Burns West
C1
17.00
0.1125

INTTOP (cm)	INTBOT (cm)	Pb210 Total (pCig-1)	Pb210 Unsup. (pCig-1)	Rho (g cm-3)	OM proportion	CUMTOP (g cm-2)	CUMBOT (g cm-2)	std Pb210 (pCig-1)
0	1	1.8549	1.2961	0.1164	0.1340	0.0000	0.1164	0.1026
1	2	1.5111	0.9523	0.0994	0.1319	0.1164	0.2158	0.0915
2	3	2.2848	1.7260	0.0855	0.1315	0.2158	0.3014	0.1155
3	4	1.9378	1.3789	0.1142	0.1329	0.3014	0.4155	0.1090
5	6	2.1590	1.6002	0.1106	0.1308	0.5402	0.6508	0.1159
6	7	2.0745	1.5157	0.1302	0.1292	0.6508	0.7810	0.1089
7	8	2.0389	1.4801	0.1281	0.1269	0.7810	0.9091	0.1096
8	9	1.4781	0.9192	0.1364	0.1283	0.9091	1.0455	0.0927
9	10	2.0752	1.5164	0.1620	0.1249	1.0455	1.2074	0.1100
11	12	1.9607	1.4019	0.1408	0.1276	1.3690	1.5097	0.1051
14	15	1.3818	0.8230	0.1433	0.1243	1.8635	2.0068	0.0869
16	17	1.0902	0.5314	0.1898	0.1227	2.1795	2.3693	0.0740
20	21	0.4890	0.0000	0.1475	0.1166	2.9207	3.0682	0.0468
24	25	0.8331	0.0000	0.2250	0.1180	3.7197	3.9447	0.0630
28	29	0.3679	0.0000	0.1707	0.1249	4.5788	4.7495	0.0414
33	34	0.4655	0.0000	0.2886	0.1061	5.7098	5.9984	0.0444
40	41	0.6879	0.0000	0.2695	0.1037	7.4684	7.7379	0.0575

Burns East - March 2005 - (Analyst: Dr. KR Laird)   Percent abundance of diatom taxa

Appendix C-1

	Top of 1 cm interval																			
Taxa	0	1	2	3	4	5	6	7	8	10	12	14	16	18	20	22	24	26	28	30
Achnanthes altaica	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00
Achnanthes clevei	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.48	0.00	0.00	0.00	0.25	0.00	0.25	0.25	0.25
Achnanthes conspicua	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00
Achnanthes exigua	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.25	0.00	0.00	0.74	0.00	0.00	0.00	0.00
Achnanthes grana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.48	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Achnanthes joursacense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.74	0.74	0.00
Achnanthes impexiformis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Achnanthes lanceolata	0.00	0.00	0.00	0.00	0.00	0.20	0.00	1.00	0.00	0.50	0.00	0.71	0.25	0.98	0.00	0.00	0.00	0.98	0.25	0.49
Achnanthes lanceolata sp. freq.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Achnanthes laterostrata	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Achnanthes minutissima	0.00	0.25	0.00	0.93	0.00	0.60	0.48	0.25	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Achnanthes oestrupii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Achnanthes peragalli	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Achnanthes rossii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Achnanthes suchlandtii	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
Achnanthes spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.25	0.00	0.24	0.25	0.48	0.25	0.74	0.25
Amphora fogediana	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.00	0.00
Amphora inariensis	0.50	0.00	0.48	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
Amphora libyca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.24	0.25	0.00	0.00
Amphora pediculus	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.49
Amphora spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asterionella formosa	2.48	1.98	2.39	2.55	1.22	0.40	0.72	2.24	1.46	0.75	1.24	0.48	0.50	0.00	0.00	0.50	0.00	0.25	0.25	0.25
Aulacoseira ambigua	3.47	2.72	1.44	2.78	1.71	3.82	3.38	4.23	3.41	6.47	3.71	6.67	5.69	4.50	7.67	7.18	3.39	3.43	3.72	7.16
Aulacoseira granulata	1.74	0.99	1.44	0.69	4.16	1.61	2.90	0.50	1.70	2.49	0.25	2.38	1.73	0.47	0.00	1.73	14.77	3.92	1.99	0.49
Aulacoseira granulata v. angustissim	9.43	10.64	12.20	13.89	9.29	11.27	4.83	4.44	1.70	0.50	1.49	0.48	0.00	0.24	0.24	0.25	0.73	1.47	0.50	0.00
Aulacoseira lacustris	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
Aulacoseira subarctica	17.37	15.34	16.75	22.45	13.94	13.48	21.01	21.89	32.12	35.07	32.43	18.57	22.03	23.93	18.71	20.30	25.42	24.02	35.46	27.41
Aulacoseira spp.	1.99	0.00	1.44	0.00	0.49	0.00	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.24	0.00	0.00	0.25
Cocconeis neodiminuta	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.25
Cocconeis placentula	0.25	0.25	0.24	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cocconeis placentula v. euglypta	0.00	0.25	0.00	1.16	0.00	0.60	0.97	0.25	0.97	0.25	0.74	0.00	0.00	0.24	0.24	0.50	0.00	0.00	0.74	0.49
Cocconeis placentula v. lineata	0.00	0.99	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.49	0.00	0.00
Cocconeis pseudothumensis	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cocconeis spp.	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Craticula cuspidata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
Craticula spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyclostephanos cf. tholiformis	0.00	0.00	0.00	0.23	0.24	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyclotella bodanica v. lemanica	2.23	3.22	1.44	3.01	4.65	3.22	1.93	3.48	2.92	6.47	10.89	11.67	9.90	6.87	14.87	11.63	4.60	7.11	12.16	8.40
Cyclotella stelligera	0.00	0.25	0.00	0.23	0.00	0.60	0.00	0.00	0.00	0.50	0.00	0.95	0.00	0.24	0.72	0.00	0.24	0.00	0.00	0.49
Cymbella muelleri fo. ventricosa	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cymbella naviculiformis	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cymbella proxima	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
Cymbella sinuata	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
Cymbella spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diploneis elliptica	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
Diploneis spp.	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.24	0.00	0.00	0.24	0.25	0.95	0.00	0.00	0.00	0.00	0.00	0.00
Epithemia adnata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Epithemia argus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.25	0.74
Epithemia spp.	0.00	0.50	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
Eunotia implicata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00
Eunotia cf. incisa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eunotia spp.	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragilaria brevistriata	0.50	0.00	0.00	0.46	1.71	3.02	1.21	0.75	1.46	0.25	2.23	0.71	4.95	1.90	13.19	2.48	0.73	2.45	0.00	0.25
Fragilaria brevistriata v. inflata	0.00	0.00	0.00	0.00	0.00	0.20	0.72	0.00	0.00	0.00	0.00	0.00	0.00	1.42	0.00	0.00	0.00	0.49	0.50	0.25
Fragilaria capucina	0.99	0.99	3.11	0.00	0.49	0.00	0.00	0.00	1.46	0.75	0.00	1.67	1.98	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Fragilaria capucina v. gracilis	0.74	0.00	0.48	0.00	0.00	0.40	0.00	0.25	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragilaria capucina v. mesolepta	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00
Fragilaria construens	2.73	2.72	1.20	2.31	6.85	1.41	1.45	1.99	2.92	0.75	7.43	9.76	4.95	10.43	4.32	5.20	6.78	10.29	5.21	4.69
Fragilaria construens fo. binodis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00
Fragilaria construens v. venter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.50	0.47	0.00	0.99	0.48	0.25	3.97	0.00
Fragilaria crotonensis	4.71	3.96	7.89	5.09	7.82	9.46	7.00	7.46	3.89	2.49	1.24	1.90	0.99	4.50	1.92	0.00	1.94	0.74	0.74	1.48
Fragilaria exigua	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	2.97	0.00	0.00	0.00	1.48
Fragilaria leptostriata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.24	0.00	0.00	0.72	0.00	0.00	0.00	0.00	0.49
Fragilaria leptostriata v. dubia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72	0.00	0.00	0.00	0.00	0.00
Fragilaria nanana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
Fragilaria parasitica	0.00	0.50	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.24	0.00	0.00	0.00	0.50	0.00
Fragilaria pinnata	2.23	7.18	3.35	4.86	2.44	1.61	3.38	2.74	5.35	8.46	9.16	16.90	12.62	18.96	20.38	29.70	20.34	20.83	18.36	21.23
Fragilaria robusta	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00
Fragilaria tenera	0.50	0.25	0.48	0.46	0.24	0.00	0.48	0.25	0.00	1.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragilaria ulna	0.00	0.00	0.00	0.69	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
Fragilaria spp.	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	2.61	0.00	0.50	0.00	0.00	0.00	0.00
Gomphonema affine	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gomphonema cf. angustatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00
Gomphonema angustum	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.47	0.00	0.00	0.00	0.00	0.00	0.00
Gomphonema clevei	0.00	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gomphonema gracile	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gomphonema grovei	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00
Gomphonema parvulum	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gomphonema spp.	0.50	0.00	0.48	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.99	0.47	0.00	0.00	0.24	0.00	0.00	0.00
Gyrosigma acuminatum	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.25
Melosira cf. varians	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Melosira spp.	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula capitata v. hungarica	0.00	0.00	0.00	0.00	0.24	0.40	0.00	0.00	0.24	0.25	1.24	0.24	0.00	0.00	0.24	0.00	0.24	0.25	0.25	0.00
Navicula cari	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula cryptotenella	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula cf. digitulus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00
Navicula cf. elginensis v. cuneata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00
Navicula evanida	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.49
Navicula cf. explanata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula ignota	0.25	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula jaernefeltii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula cf. kraeskei	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula cf. tenzii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula minima	0.00	0.00	1.44	0.46	0.00	0.00	0.00	0.00	0.24	0.00	0.25	1.43	0.00	0.24	0.00	1.24	0.24	0.49	0.00	0.25
Navicula porifera v. opportuna	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.50	0.00
Navicula pseudoscutiformis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.72	0.00	0.00	0.00	0.00	0.25
Navicula pseudoventralis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
Navicula pupula	0.00	0.00	0.00	0.23	0.00	0.00	0.24	0.00	0.00	0.00	0.50	0.00	0.00	0.95	0.00	0.50	0.73	0.00	0.00	0.00
Navicula rhynchocephala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00
Navicula rotunda	0.00	0.00	0.00	0.00	0.49	0.00	0.48	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.24	0.00	0.00	1.72	0.00	0.00
Navicula schadei	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00
Navicula schoenfeldii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.48	0.00	0.00	0.00
Navicula seminuloides	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.50	0.00	0.24	0.00	0.48	0.74	0.00	0.49
Navicula cf. seminulum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73	0.00	0.00	0.49
Navicula submuralis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.74
Navicula subrotundata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
Navicula vitabunda	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Navicula vitiosa	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.48	0.00	0.00	0.00
Navicula spp.	1.24	0.00	0.00	0.00	0.49	0.60	0.97	0.25	1.46	1.00	2.72	1.19	1.49	2.13	1.92	0.74	2.18	1.47	1.99	1.98
Neidium affine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00
Neidium spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nitzschia acicularis	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nitzschia amphibia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.24	0.00	0.00	0.00
Nitzschia angustata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
Nitzschia cf. dissipata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.24	0.00	0.00	0.00
Nitzschia inconspicua	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nitzschia liebetruthii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nitzschia linearis v. subtilis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nitzschia perminuta	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nitzschia spp.	0.00	0.50	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.74
Pinnularia nodosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00
Rhizosolenia cyst	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
Rhoicosphenia curvata	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00
Rhopalodia gibba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.25	0.00
Rhopalodia spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stephanodiscus minutulus	20.60	14.11	14.11	8.33	15.40	11.47	14.49	7.21	8.76	4.73	3.96	6.67	6.68	4.03	0.72	1.24	2.42	1.72	1.49	2.22
Stephanodiscus niagarae	0.74	0.50	0.24	0.93	0.98	2.21	0.97	1.24	2.68	3.23	4.95	4.05	4.95	5.69	4.32	3.71	2.18	3.92	5.71	6.91
Stephanodiscus parvus	15.63	23.02	20.33	21.30	19.32	23.34	21.50	29.10	16.06	12.69	5.20	5.24	9.41	4.27	3.12	1.73	2.18	5.39	1.49	3.70
Surirella spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
Tabellaria fenestrata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tabellaria flocculosa str. 3p	2.73	4.46	1.44	2.31	2.44	3.42	4.35	5.72	4.87	7.21	3.22	1.90	1.73	1.66	1.20	1.73	1.69	2.21	0.74	1.98
Tabellaria flocculosa v. linearis	2.48	1.24	2.15	1.85	1.96	2.41	2.66	1.24	0.24	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Tabellaria gir	2.48	1.49	2.15	0.93	0.00	1.61	0.97	1.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Centric unknown	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pennate unknown	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.24	0.00	0.00	0.24	0.00	1.21	0.00	0.00	0.00

C-2

Burns West - March 2005 - (Analyst: Dr. KR Laird)   Percent abundance of diatom taxa

Taxa	Top of 1 cm interval 0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
Achnanthes altaica	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00
Achnanthes clevei	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.24	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00
Achnanthes conspicua	0.50	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.46	0.00	0.49	0.48	0.00	0.49	0.00	0.49	0.48	0.95
Achnanthes exigua	0.74	0.50	0.24	0.00	0.00	0.25	0.00	0.48	0.48	0.00	0.00	1.23	0.24	0.00	0.24	0.49	0.00	0.00	0.00	0.47
Achnanthes grana	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Achnanthes joursacense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.67	0.00	0.24	0.00
Achnanthes impexiformis	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00
Achnanthes lanceolata	0.00	0.25	0.73	0.98	0.24	0.00	1.17	0.00	0.00	0.47	0.46	0.74	0.97	1.19	0.48	1.23	0.45	0.49	0.96	0.47
Achnanthes lanceolata sp. freq.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.00	0.49	0.72	0.48	0.25	0.00	0.00	0.00	0.00
Achnanthes laterostrata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Achnanthes minutissima	0.99	0.00	0.00	0.49	0.47	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.24	0.00	0.00	0.00	0.48	0.00
Achnanthes oestrupii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Achnanthes subatomoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00
Achnanthes suchlandtii	0.74	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.24	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Achnanthes ziegleri	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Achnanthes spp.	0.25	0.00	0.00	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.49	0.00	0.72	0.00	0.22	0.00	0.00	0.00
Amphora libyca	0.00	0.50	0.24	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.00	0.00	0.48	0.25	0.00	0.00	0.00	0.47
Amphora pediculus	0.50	0.00	0.00	0.49	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.24	0.24	0.00	0.00	0.24	0.00	0.71
Amphora spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00
Asterionella formosa	2.72	0.74	0.98	2.93	1.65	1.48	0.23	0.00	0.48	0.47	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.24	0.00	0.00
Aulacoseira ambigua	5.69	3.97	4.16	4.39	4.48	3.70	4.22	5.31	8.43	6.13	3.23	6.86	5.10	7.88	7.47	4.41	6.52	2.20	1.91	2.84
Aulacoseira cf. crenulata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00
Aulacoseira distans v. humilis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.72	0.00	0.00	0.00	0.00	0.24
Aulacoseira granulata	1.49	1.24	1.22	3.90	2.59	2.96	2.58	1.21	1.93	0.71	3.23	1.96	0.97	0.95	0.48	0.74	0.90	0.98	5.02	1.18
Aulacoseira granulata v. angustissima	9.16	13.40	11.98	10.00	15.57	10.62	1.87	1.93	0.96	0.71	0.23	0.25	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aulacoseira subarctica	15.84	17.37	16.38	12.68	15.33	23.95	28.31	29.23	19.28	16.51	14.09	10.05	12.38	13.84	16.87	10.05	7.19	3.85	10.77	4.50
Aulacoseira spp.	0.00	0.50	0.24	0.00	0.00	0.00	0.23	0.00	0.48	0.00	0.00	0.25	0.49	0.00	0.72	0.49	0.00	0.24	0.00	0.00
Brachysira neoexilis	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00
Caloneis silicula	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Campylodiscus spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00
Cocconeis disculus	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cocconeis neodiminuta	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Cocconeis placentula	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.22	0.24	0.00	0.00
Cocconeis placentula v. euglypta	0.00	0.25	0.49	0.49	0.71	0.00	0.94	0.00	0.24	0.00	0.00	0.25	0.00	0.48	0.00	0.00	0.00	0.24	0.00	0.00
Cocconeis placentula v. lineata	1.98	0.25	0.00	1.46	0.24	0.00	0.23	0.00	0.00	0.24	0.23	0.25	0.24	0.00	0.72	0.00	0.22	0.00	0.00	0.00
Cocconeis spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Craticula cuspidata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
Cyclostephanos cf. tholiformis	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyclotella bodanica v. lemanica	1.98	2.23	1.96	2.44	4.72	2.47	3.51	4.59	4.34	3.54	7.62	5.83	4.85	3.82	3.61	4.17	3.60	2.44	2.87	1.90
Cyclotella stelligera	0.25	0.25	0.73	0.00	0.00	0.00	0.47	0.00	0.00	0.24	0.23	0.00	0.24	0.48	0.24	0.25	0.45	0.00	0.00	0.00
Cymbella amphicephala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00
Cymbella cf. mesiana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00
Cymbella microcephala	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cymbella silesiaca	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Cymbella sinuata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00
Cymbella spp.	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.24	0.24	0.00	0.00	0.00	0.00	0.00	0.00
Diploneis elliptica	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Diploneis spp.	0.25	0.00	0.24	0.24	0.00	0.00	0.47	0.00	0.24	0.24	0.00	0.25	0.49	0.00	0.00	0.00	0.00	0.00	0.24	0.00
Epithemia adnata	0.00	0.00	0.00	0.00	0.71	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.49	0.00	0.00
Epithemia spp.	0.00	0.50	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.45	1.46	0.00	0.00
Eunotia bilunaris	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eunotia cf. formica	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00
Eunotia cf. incisa	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.48	0.00	0.00	0.24	0.00	0.00
Eunotia spp.	0.25	0.00	0.00	0.00	0.00	0.25	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.72	0.00	0.00	0.00	0.00	0.96	0.00
Fragilaria brevistriata	2.23	4.71	0.49	1.22	0.47	3.46	3.75	7.25	2.89	4.48	2.31	1.47	9.22	5.25	7.23	5.64	6.52	5.12	7.66	6.40
Fragilaria brevistriata v. inflata	0.00	0.25	0.00	0.24	0.00	0.49	0.00	0.24	0.48	0.24	0.23	0.00	0.00	0.00	0.00	0.00	0.45	0.49	0.00	0.00
Fragilaria capucina	0.00	0.99	0.98	3.41	0.00	0.25	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Fragilaria capucina v. gracilis	0.00	0.50	0.24	0.24	0.47	0.00	0.47	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00
Fragilaria capucina v. mesolepta	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.24	0.00
Fragilaria construens	8.42	4.71	8.31	10.73	8.02	3.70	6.79	14.25	18.80	16.27	14.09	16.67	10.92	16.47	15.18	23.04	18.40	24.15	19.86	28.44
Fragilaria construens fo. binodis	0.00	0.00	0.00	0.49	0.24	0.25	0.00	0.00	0.00	1.89	0.00	0.00	0.97	0.00	0.00	1.72	0.22	0.98	0.00	0.47
Fragilaria construens v. pumila	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.00	3.82	0.00	1.72	0.00	0.73	0.00	0.71
Fragilaria construens v. venter	0.74	0.50	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.46	0.00	0.49	0.95	0.24	0.25	0.90	0.00	0.72	0.47
Fragilaria crotonensis	3.96	4.47	1.47	6.59	4.48	10.12	0.94	1.93	0.96	0.94	0.23	0.00	0.24	0.48	0.00	1.47	0.67	0.00	0.00	0.00
Fragilaria exigua	0.00	0.00	0.00	0.00	0.47	0.00	0.23	0.00	0.72	0.00	1.62	0.25	0.00	0.00	0.00	0.00	1.35	0.00	2.87	0.00
Fragilaria cf. fasciculata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragilaria lapponica	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48	0.00	0.47	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Fragilaria leptostriata	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Fragilaria nanana	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragilaria neoproducta	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragilaria parasitica	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.98	0.00	0.24	0.24	0.25	0.00	0.24	0.00	0.00
Fragilaria pinnata	12.87	17.62	13.20	13.17	16.51	13.33	21.08	16.67	23.81	29.25	36.95	33.09	32.77	25.06	27.23	33.33	35.96	34.05	36.36	39.81
Fragilaria robusta	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragilaria tenera	0.74	0.74	0.73	0.73	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragilaria ulna	0.50	0.00	0.48	0.49	0.00	0.25	0.00	0.00	0.00	0.24	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fragilaria spp.	0.74	0.50	0.24	0.49	0.94	0.25	0.23	0.00	0.72	1.42	0.46	0.00	1.94	0.72	0.00	0.00	0.00	0.00	0.00	0.24
Gomphonema acuminatum	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72	0.00	0.00	0.00	0.00	0.00
Gomphonema contraturis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00
Gomphonema gracile	0.00	0.00	0.00	0.49	0.00	0.25	0.00	0.00	0.24	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Gomphonema grovei	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gomphonema cf. minutum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00
Gomphonema parvulum	0.00	0.50	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gomphonema subtile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00
Gomphonema cf. sp. 1 PISCES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Gomphonema spp.	0.99	0.99	0.00	0.00	0.00	0.99	1.41	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.25	0.67	0.00	0.00	0.00
Gyrosigma acuminatum	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.24	0.00	0.24	0.00	0.49	0.00	0.24	0.24	0.25	0.00	0.49	0.48	0.47
Melosira undulata	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.24	0.24	0.00	0.00	0.25	0.73	0.24	0.00	0.25	0.00	0.24	0.24	0.00
Meridion circulare	0.25	0.00	0.49	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00
Navicula absoluta	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00
Navicula aurora	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00
Navicula americana	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula capucina v. hungarica	0.00	0.25	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.98	0.00	0.24	0.00	0.00	0.22	0.00	0.24	0.00
Navicula cari	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00
Navicula constans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula cryptotenella	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00
Navicula disjuncta	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula cf. elginensis v. cuneata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Navicula evanida	0.00	0.00	0.00	0.00	0.24	0.49	0.23	0.24	0.00	0.00	0.00	0.49	0.00	0.00	0.24	0.00	0.00	0.24	0.00	0.47
Navicula cf. explanata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula jaernefeltii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula laevissima	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00
Navicula laterostrata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Navicula cf. leptostriata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Navicula minima	0.00	0.00	0.00	0.24	0.00	0.00	0.94	0.24	0.48	1.89	1.85	1.47	1.21	0.72	0.72	0.49	2.25	1.22	0.48	0.24
Navicula cf. modica	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00
Navicula pseudoscutiformis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00
Navicula pseudoventralis	0.50	0.00	0.00	0.24	0.71	0.00	0.00	0.72	0.00	0.47	0.00	0.25	1.46	0.24	0.72	0.00	0.45	0.24	0.00	0.71
Navicula pupula	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.49	0.00	1.19	0.48	0.98	0.00	0.73	0.00	0.00
Navicula rhynchocephala	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula rotunda	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.48	0.00	0.45	0.24	0.48	0.00
Navicula schadei	0.00	0.00	0.49	0.24	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula schoenfeldii	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.24	0.00	0.00	0.49	0.49	0.48	0.00	0.25	0.00	0.00	0.00	0.00
Navicula seminuloides	0.50	0.00	0.00	0.00	0.94	0.99	0.23	0.48	0.00	0.71	0.69	0.49	0.49	0.00	0.00	0.00	0.45	0.24	0.00	1.18
Navicula cf. seminulum	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.24	0.24	0.00	0.00	0.24	0.00	0.72	0.00	0.00	0.00	0.00	0.00
Navicula submuralis	0.25	0.00	0.00	0.00	0.24	0.25	0.00	0.97	0.72	0.00	0.46	0.74	0.00	0.72	0.00	0.00	0.00	0.73	0.00	0.47
Navicula subrotundata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00
Navicula aff utermoehlii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navicula vitabunda	0.99	0.00	0.49	0.73	0.00	0.00	0.00	0.72	0.00	0.24	0.00	0.49	0.49	0.00	0.00	0.00	0.67	0.00	0.96	0.47
Navicula vitiosa	0.25	0.25	0.24	0.00	0.24	0.49	0.47	0.48	0.72	0.00	0.69	0.00	0.00	0.96	0.00	0.00	1.12	1.46	0.00	0.00
Navicula spp.	0.50	0.74	1.22	0.24	0.00	0.49	1.17	1.45	2.17	2.59	2.08	1.47	3.88	2.86	1.20	1.47	4.27	2.68	1.67	1.18
Neidium spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.24
Nitzschia amphibia	0.00	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nitzschia angustata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Nitzschia spp.	0.99	0.00	0.00	0.48	0.00	0.49	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pinnularia maior	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pinnularia microstauron	0.25	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pinnularia spp	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Rhoicosphenia curvata	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rhopalodia gibba	0.00	0.00	0.00	0.00	0.24	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stauroneis smithii	0.00	0.00	0.00	0.00	0.00	0.25	0.23	0.24	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00
Stephanodiscus minutulus	6.19	3.72	10.27	4.39	2.12	2.96	0.94	0.97	1.20	0.47	0.46	0.98	0.00	0.95	0.96	0.74	0.22	0.24	0.24	1.18
Stephanodiscus niagarie	0.74	0.99	0.73	1.46	1.18	0.99	3.98	1.21	1.20	2.59	2.08	2.70	1.46	2.39	1.69	2.70	2.02	1.71	1.20	0.71
Stephanodiscus parvus	6.68	6.70	11.98	4.88	5.19	6.91	5.15	2.17	1.93	1.89	0.46	0.25	0.24	0.72	1.69	0.25	0.67	0.73	0.96	0.24
Tabellaria flocculosa str. 3p	3.71	3.97	4.16	2.44	2.83	2.72	1.41	1.93	1.69	1.89	1.62	0.98	0.49	0.72	0.72	0.74	0.00	0.98	0.24	0.24
Tabellaria flocculosa str. 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tabellaria flocculosa v. linearis	2.23	1.49	1.71	2.68	3.77	1.98	0.47	0.00	0.24	0.00	0.00	0.25	0.00	0.24	0.24	0.00	0.00	0.00	0.00	0.00
Tabellaria gir	0.25	0.25	0.00	0.24	0.94	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Resting spore - cysts valves	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pennate unknown	0.00	0.00	0.00	0.24	0.00	0.00	0.23	0.24	0.24	0.00	0.23	0.25	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00