ENVIRONMENT CANADA
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BASELINE WATER QUALITY MONITORING AT THE WESTMIN RESOURCES LIMITED SILBAK PREMIER PROJECT
- August 9 1987 -

Data Report DR-88-06

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August 1988

Introduction

The Silbak Premier project is located in the Salmon river drainage system. The mine is located on the east side of the Cascade Creek valley, about 1 km upstream of the border. The Big Missouri project located further north, will be connected to the Silbak project by a road crossing the Hovland Creek and Lesley Creek. The mill site will be located between these two creeks. The Silbak mine site is drained by Cooper creek to the north and to the west and by Wilson Creek to the south. Both creeks join above the Granduc road to form Fletcher Creek, which flows into Cascade Creek immediately below the falls (Figure 1). The falls on Cascade Creek is an impassable barrier to salmon migration. Cascade Creek joins the Salmon River about 1.5 km downstream. Salmon River supports chum, pink and coho salmon, and occasionnally sockeye salmon.

The company is developing an open pit mine using cyanide to extract gold and silver in the ore. The tailings pond will be located in the Cascade Creek valley necessitating the diversion of the creek. The tailings will be discharged using the subaerial technique. The supernatant will be discharge to Cascade Creek above the falls.

Site description

Station	Location
1	Hovland creek upstream of the mill
2	Lesley Creek upstream of the mill
3	Cooper creek upstream of the open pit
4	Cascade Creek upstream of the tailings pond
5	Lesley Creek downstream of the mill
6	Hovland Creek downstream of the mill
7	Cooper Creek downstream of the open pit
8	Fletcher Creek upstream of Cascade Creek

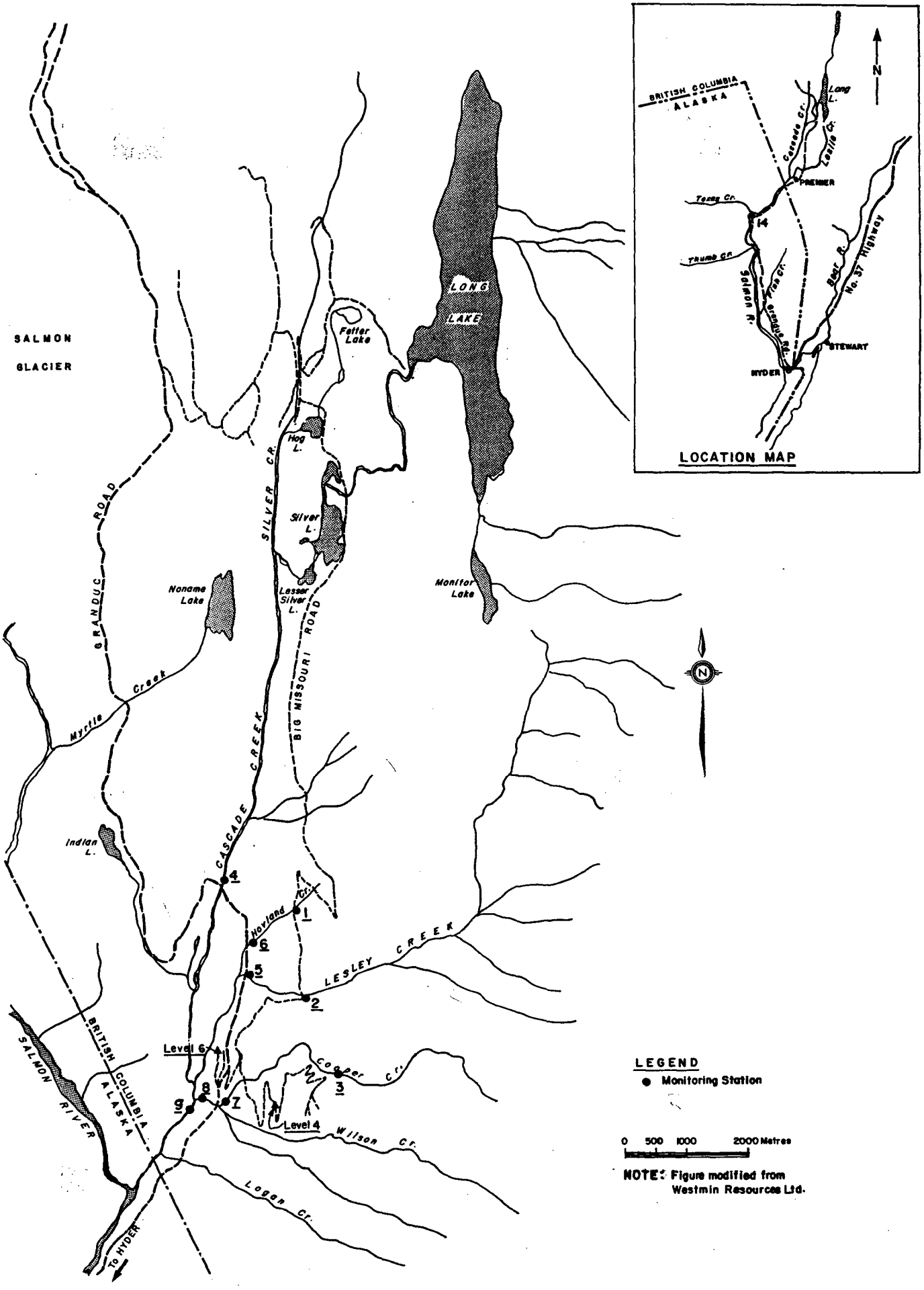


FIGURE 1 RECEIVING WATER SAMPLING STATIONS

9 Cascade Creek downstream of the tailings pond

Level #6 Mine portal (above old tailings)

Level #4 Mine portal

Material and Methods

The site was visited on August 9 1987. Nine receiving water stations were sampled for water quality and sediment analysis and two mine adits for water quality only. Triplicate water samples were collected at each stations, and single grabs for the mine adits. The following chemical parameters were analyzed : alkalinity, pH, conductivity, total residues, non filterable residues, ammonia, nitrite, nitrate, and sulphate. Samples were kept cool with ice until analyzed. Total cyanide and thiocyanide were preserved with sodium hydroxide to raise the pH above 12. Dissolved metals were filtered the same day through a 0.45 micron cellulose nitrate membrane filter. Total and dissolved metals were preserved with nitric acid (0.5 ml/100 ml of sample) All samples were collected with clean polyethelene bottles. The bottles for metal analysis were previously acid washed. The hardness was determined from the dissolved metal sample.

Inductively Coupled Argon Plasma (ICAP) was used for the total and dissolved metal analysis and gave a reading of twenty six metals. For silver, cadmium, copper,and lead the samples were reanalyzed with the graphite furnace when the values were below two times the detection limit on the ICAP procedure. Total mercury samples were preserved with 5 ml of a dichromate (0.05% W/V) and nitric acid (5% V/V) solution and analyzed with an open flameless atomic absorption spectrophotometer.

Four replicate samples were collected for sediment using a plastic corer at each site. The samples were dried at 103 C seived and the fraction less than 150 microns was digested in aqua regia. The leachate was analyzed with the ICP method, and reported on a dry weight basis.

The comparisons for graphical purposes were performed by the one way ANOVA, and using the Tukey's harmonic significant difference multiple comparison plot performed on a Hewlett Packer model 9826. The significant level was established at $a = 0.05$.

Results

The receiving water metal results can be found in Table 1,

while the other water quality results are found in Table 2. The mine adit results can be found in Table 3. The sediments data are reported in Table 4.

All water samples had a very low non filterable residue. Most of the dissolved heavy metals concentrations were near or below detection limit, except for the stations 7 and 8, where the metals were always above the detection limit. This seems to reflect the influence of the mine adit on level #4, which drains into the lower part of Cooper Creek and Fletcher Creek. Level #6 drains into Cascade Creek, which has greater dilution. Mine adit metal content at level #6 was generally higher than at level #4. The level #6 metal content was, on a total basis, 0.039 mg/l Cd; 0.078 mg/l Cu; 1.980 mg/l Fe; 0.0098 mg/l Pb; 3.670 mg/l Zn.

Sediments concentrations were statistically analysed and presented in figure 2 with the station separation results in table 5.

The results showed that the amount of aluminum, and calcium in the sediments depends greatly on the particular creek concerned. The arsenic levels increase in Hovland creek downstream but the cause of this increase is unknown. The amount of cadmium, copper, mercury, lead and zinc, were significantly different at station 7, downstream of the mine adit level # 4, where orange staining was evident. The downstream metal content at stations 8 and 9 were not significantly different than the other stations but the means were usually higher. These two stations have larger flows and few sediment accumulation sites. The streambed sediment transport may be significant and might have a significant effect on the water quality during freshet. Baseline water quality should take into consideration the effect that mine adits might have downstream.

Table 1

Water quality - Silbak Premier
August 9, 1987

Station Number		TOTGF AG MG/L	DISGF AG MG/L	TOTICP AL MG/L	DISICP AL MG/L	TOTICP AS MG/L	DISICP AS MG/L	TOTICP BA MG/L	DISICP BA MG/L	TOTICP CA MG/L	DISICP CA MG/L	TOTICP CD MG/L	TOTGF CD MG/L	DISICP CD MG/L	DISGF CD MG/L	TOTICP CO MG/L	DISICP CO MG/L
	Repl. 1	0.0002	0.0001	<.05	<.05	<.05	<.05	0.100	0.099	20.2	20.0	<.002	<0.0001	<.002	<0.0001	<.005	<.005
1	Repl. 2	0.0002	0.0002	0.05	<.05	<.05	<.05	0.102	0.099	20.7	20.1	<.002	<0.0001	<.002	<0.0001	<.005	<.005
	Repl. 3	0.0002	0.0002	<.05	<.05	<.05	<.05	0.097	0.096	19.7	19.5	<.002	<0.0001	<.002	<0.0001	<.005	<.005
	Average	0.0002	0.0002	---	---	---	---	0.100	0.098	20.2	19.9	---	---	---	---	---	---
	S.D.	0.0000	0.0001	---	---	---	---	0.003	0.002	0.5	0.3	---	---	---	---	---	---
	Repl. 1	<0.0001	<0.0001	0.24	<.05	<.05	<.05	0.043	0.036	6.8	6.6	<.002	<0.0001	<.002	<0.0001	<.005	<.005
2	Repl. 2	<0.0001	<0.0001	0.25	<.05	<.05	<.05	0.044	0.037	7.0	6.5	<.002	<0.0001	<.002	<0.0001	0.006	<.005
	Repl. 3	<0.0001	<0.0001	0.26	<.05	<.05	<.05	0.045	0.037	7.1	6.5	<.002	<0.0001	<.002	<0.0001	0.011	<.005
	Average	---	---	0.25	---	---	---	0.044	0.037	7.0	6.5	---	---	---	---	0.009	---
	S.D.	---	---	0.01	---	---	---	0.001	0.001	0.2	0.1	---	---	---	---	0.004	---
	Repl. 1	0.0001	<0.0001	0.21	<.05	<.05	<.05	0.160	0.152	10.7	10.4	<.002	<0.0001	<.002	<0.0001	0.009	<.005
3	Repl. 2	0.0001	<0.0001	0.14	<.05	<.05	<.05	0.164	0.150	10.8	10.3	<.002	<0.0001	<.002	<0.0001	0.005	<.005
	Repl. 3	0.0001	<0.0001	0.16	<.05	<.05	<.05	0.161	0.152	10.8	10.4	<.002	<0.0001	<.002	<0.0001	<.005	<.005
	Average	0.0001	---	0.17	---	---	---	0.162	0.151	10.8	10.4	---	---	---	---	0.007	---
	S.D.	0.0000	---	0.04	---	---	---	0.002	0.001	0.1	0.1	---	---	---	---	0.003	---
	Repl. 1	<0.0001	<0.0001	0.16	<.05	<.05	<.05	0.014	0.009	3.5	3.2	<.002	<0.0001	<.002	<0.0001	0.005	<.005
4	Repl. 2	<0.0001	<0.0001	0.12	<.05	<.05	<.05	0.012	0.010	3.4	3.3	<.002	<0.0001	0.004	---	<.005	0.006
	Repl. 3	<0.0001	<0.0001	0.12	<.05	<.05	0.06	0.012	0.010	3.4	3.2	<.002	<0.0001	0.004	---	<.005	<.005
	Average	---	---	0.13	---	---	---	0.013	0.010	3.4	3.2	---	---	0.004	---	---	---
	S.D.	---	---	0.02	---	---	---	0.001	0.001	0.1	0.1	---	---	0.000	---	---	---
	Repl. 1	<0.0001	<0.0001	0.20	<.05	0.06	<.05	0.044	0.036	7.1	6.6	<.002	<0.0001	<.002	<0.0001	0.007	<.005
5	Repl. 2	<0.0001	<0.0001	0.21	<.05	<.05	<.05	0.042	0.037	7.0	6.6	<.002	<0.0001	0.003	<0.0001	<.005	<.005
	Repl. 3	<0.0001	<0.0001	0.22	<.05	<.05	<.05	0.043	0.035	7.2	6.4	<.002	<0.0001	<.002	<0.0001	<.005	<.005
	Average	---	---	0.21	---	---	---	0.043	0.036	7.1	6.5	---	---	---	---	---	---
	S.D.	---	---	0.01	---	---	---	0.001	0.001	0.1	0.1	---	---	---	---	---	---
	Repl. 1	0.0003	0.0003	0.07	<.05	<.05	<.05	0.083	0.080	22.3	21.6	<.002	<0.0001	<.002	<0.0001	<.005	<.005
6	Repl. 2	0.0003	0.0003	0.14	<.05	<.05	<.05	0.086	0.080	22.7	21.4	0.003	<0.0001	0.003	<0.0001	<.005	0.006
	Repl. 3	0.0003	0.0003	0.08	<.05	<.05	<.05	0.083	0.080	22.2	21.3	0.003	<0.0001	0.004	<0.0001	<.005	<.005
	Average	0.0003	0.0003	0.10	---	---	---	0.084	0.080	22.4	21.4	0.003	---	0.004	---	---	---
	S.D.	0.0000	0.0000	0.04	---	---	---	0.002	0.000	0.3	0.2	0.000	---	0.001	---	---	---
	Repl. 1	0.0003	0.0003	0.13	<.05	<.05	<.05	0.126	0.110	21.8	20.5	0.004	---	0.003	0.0021	<.005	<.005
7	Repl. 2	0.0003	0.0003	0.13	<.05	<.05	<.05	0.121	0.109	21.3	20.2	0.008	---	0.003	0.0021	0.005	<.005
	Repl. 3	0.0003	0.0003	0.13	<.05	<.05	<.05	0.126	0.108	21.7	20.1	0.005	---	0.003	0.0020	0.006	<.005
	Average	0.0003	0.0003	0.13	---	---	---	0.124	0.109	21.6	20.3	0.006	---	0.003	0.0021	0.006	---
	S.D.	0.0000	0.0000	0.00	---	---	---	0.003	0.001	0.3	0.2	0.002	---	0.000	0.0001	0.001	---
	Repl. 1	0.0001	0.0001	0.29	<.05	<.05	<.05	0.106	0.092	12.4	11.9	<.002	0.0006	<.002	0.0004	<.005	<.005
8	Repl. 2	0.0001	0.0001	0.27	<.05	<.05	<.05	0.107	0.088	12.4	11.3	0.004	0.0006	<.002	0.0004	<.005	<.005
	Repl. 3	0.0001	0.0001	0.26	<.05	<.05	<.05	0.108	0.090	12.6	11.6	0.003	0.0006	<.002	0.0004	<.005	<.005
	Average	0.0001	0.0001	0.27	---	---	---	0.107	0.090	12.5	11.6	0.004	0.0006	---	0.0004	---	---
	S.D.	0.0000	0.0000	0.02	---	---	---	0.001	0.002	0.1	0.3	0.001	0.0000	---	0.0000	---	---
	Repl. 1	<0.0001	<0.0001	0.18	<.05	<.05	<.05	0.024	0.018	4.6	4.4	0.002	<0.0001	<.002	<0.0001	<.005	<.005
9	Repl. 2	<0.0001	<0.0001	0.17	<.05	<.05	<.05	0.025	0.018	4.7	4.4	<.002	<0.0001	<.002	<0.0001	<.005	<.005
	Repl. 3	<0.0001	<0.0001	0.18	<.05	<.05	<.05	0.025	0.018	4.6	4.4	0.004	0.0001	<.002	<0.0001	<.005	<.005
	Average	---	---	0.18	---	---	---	0.025	0.018	4.6	4.4	0.003	---	---	---	---	---
	S.D.	---	---	0.01	---	---	---	0.001	0.000	0.1	0.0	0.001	---	---	---	---	---

Table 1 (cont.)

Water quality - Silbak Premier -
August 9, 1987

Station Number		TOTICP CR MG/L	DISICP CR MG/L	TOTICP CU MG/L	TOTGF CU MG/L	DISICP CU MG/L	DISGF CU MG/L	TOTICP FE MG/L	DISICP FE MG/L	TOTHG HG MG/L	TOTICP MG MG/L	DISICP MG MG/L	TOTICP MN MG/L	DISICP MN MG/L	TOTICP MO MG/L	DISICP MO MG/L	TOTICP NA MG/L	DISICP NA MG/L
	Repl. 1	<.005	<.005	<.005	<0.0005	<.005	<0.0005	<.005	<.005	<.00005	1.1	1.0	<.001	<.001	<.005	<.005	0.8	0.8
1	Repl. 2	<.005	<.005	<.005	<0.0005	<.005	<0.0005	<.005	<.005	<.00005	1.2	1.0	<.001	<.001	<.005	<.005	0.9	0.8
	Repl. 3	<.005	<.005	<.005	<0.0005	<.005	<0.0005	<.005	<.005	<.00005	1.1	1.0	<.001	<.001	<.005	0.006	0.8	0.7
	Average	---	---	---	---	---	---	---	---	---	1.1	1.0	---	---	---	---	0.8	0.8
	S.D.	---	---	---	---	---	---	---	---	---	0.1	0.0	---	---	---	---	0.1	0.1
	Repl. 1	<.005	<.005	<.005	<0.0005	<.005	<0.0005	0.177	<.005	<.00005	1.0	0.9	0.007	<.001	<.005	<.005	0.3	0.3
2	Repl. 2	<.005	<.005	<.005	<0.0005	<.005	<0.0005	0.201	<.005	<.00005	1.1	0.9	0.007	<.001	<.005	<.005	0.3	0.2
	Repl. 3	0.006	<.005	0.007	<0.0005	<.005	<0.0005	0.202	<.005	<.00005	1.2	0.9	0.008	<.001	<.005	<.005	0.4	0.3
	Average	---	---	---	---	---	---	0.193	---	---	1.1	0.9	0.007	---	---	---	0.3	0.3
	S.D.	---	---	---	---	---	---	0.014	---	---	0.1	0.0	0.001	---	---	---	0.1	0.1
	Repl. 1	<.005	<.005	<.005	<0.0005	<.005	<0.0005	0.183	<.005	<.00005	1.1	0.9	0.011	<.001	<.005	<.005	0.7	0.5
3	Repl. 2	<.005	<.005	<.005	<0.0005	<.005	<0.0005	0.152	<.005	<.00005	1.0	0.8	0.009	<.001	<.005	<.005	0.6	0.5
	Repl. 3	<.005	<.005	<.005	<0.0005	<.005	<0.0005	0.150	<.005	<.00005	0.9	0.8	0.008	<.001	<.005	<.005	0.6	0.5
	Average	---	---	---	---	---	---	0.162	---	---	1.0	0.8	0.009	---	---	---	0.6	0.5
	S.D.	---	---	---	---	---	---	0.019	---	---	0.1	0.1	0.002	---	---	---	0.1	0.0
	Repl. 1	<.005	<.005	<.005	<0.0005	<.005	<0.0005	0.133	<.005	<.00005	0.5	0.4	0.006	<.001	<.005	<.005	0.5	0.2
4	Repl. 2	<.005	0.006	<.005	<0.0005	0.006	<0.0005	0.111	<.005	<.00005	0.5	0.5	0.004	0.002	<.005	0.013	0.3	0.2
	Repl. 3	<.005	0.007	<.005	<0.0005	0.007	<0.0005	0.109	<.005	0.00010	0.6	0.4	0.005	0.002	<.005	0.007	0.2	0.2
	Average	---	0.007	---	---	0.007	---	0.118	---	---	0.5	0.4	0.005	0.002	---	0.010	0.3	0.2
	S.D.	---	0.001	---	---	0.001	---	0.013	---	---	0.1	0.1	0.001	0.000	---	0.004	0.2	0.0
	Repl. 1	<.005	<.005	<.005	0.0006	<.005	<0.0005	0.161	<.005	0.00008	1.1	0.9	0.007	<.001	<.005	0.008	0.3	0.3
5	Repl. 2	<.005	0.007	<.005	<0.0005	<.005	<0.0005	0.165	<.005	<.00005	1.1	0.9	0.007	<.001	<.005	0.011	0.3	0.3
	Repl. 3	<.005	<.005	<.005	<0.0005	<.005	<0.0005	0.157	<.005	<.00005	1.2	0.9	0.006	<.001	<.005	<.005	0.3	0.2
	Average	---	---	---	---	---	---	0.161	---	---	1.1	0.9	0.007	---	---	0.010	0.3	0.3
	S.D.	---	---	---	---	---	---	0.004	---	---	0.1	0.0	0.001	---	---	0.002	0.0	0.1
	Repl. 1	<.005	<.005	<.005	<0.0005	<.005	<0.0005	0.028	<.005	0.00005	1.1	1.0	0.004	<.001	<.005	<.005	1.1	0.9
6	Repl. 2	0.006	<.005	<.005	0.0007	<.005	<0.0005	0.033	<.005	<.00005	1.2	1.0	0.004	<.001	<.005	<.005	1.1	1.0
	Repl. 3	<.005	0.006	<.005	<0.0005	<.005	<0.0005	0.031	<.005	0.00008	1.1	1.0	0.003	<.001	<.005	0.006	1.1	0.9
	Average	---	---	---	---	---	---	0.031	---	0.00007	1.1	1.0	0.004	---	---	---	1.1	0.9
	S.D.	---	---	---	---	---	---	0.003	---	0.00002	0.1	0.0	0.001	---	---	---	0.0	0.1
	Repl. 1	<.005	<.005	0.008	0.0072	<.005	0.0014	0.286	<.005	0.00012	1.5	1.4	0.041	0.025	<.005	<.005	0.7	0.6
7	Repl. 2	<.005	<.005	0.011	---	<.005	0.0015	0.295	0.005	0.00014	1.5	1.4	0.042	0.025	<.005	<.005	0.7	0.6
	Repl. 3	<.005	<.005	0.014	---	<.005	0.0015	0.302	<.005	0.00020	1.5	1.3	0.040	0.025	<.005	<.005	0.7	0.6
	Average	---	---	0.011	---	---	0.0015	0.294	---	0.00015	1.5	1.4	0.041	0.025	---	---	0.7	0.6
	S.D.	---	---	0.003	---	---	0.0001	0.008	---	0.00004	0.0	0.1	0.001	0.000	---	---	0.0	0.0
	Repl. 1	<.005	<.005	<.005	0.0016	<.005	0.0006	0.266	<.005	0.00012	0.9	0.8	0.018	0.006	<.005	<.005	0.6	0.5
8	Repl. 2	<.005	<.005	0.006	0.0018	<.005	0.0007	0.265	<.005	0.00012	0.9	0.7	0.019	0.006	<.005	<.005	0.6	0.5
	Repl. 3	<.005	<.005	0.006	0.0017	<.005	0.0006	0.261	<.005	0.00008	0.9	0.7	0.025	0.007	0.005	<.005	0.7	0.5
	Average	---	---	0.006	0.0017	---	0.0006	0.264	---	0.00011	0.9	0.7	0.021	0.006	---	---	0.6	0.5
	S.D.	---	---	0.000	0.0001	---	0.0001	0.003	---	0.00002	0.0	0.1	0.004	0.001	---	---	0.1	0.0
	Repl. 1	<.005	<.005	0.006	<0.0005	<.005	<0.0005	0.157	<.005	0.00009	0.7	0.6	0.008	0.001	<.005	<.005	0.3	0.2
9	Repl. 2	<.005	<.005	<.005	<0.0005	<.005	<0.0005	0.160	<.005	0.00008	0.8	0.5	0.008	0.002	<.005	<.005	0.3	0.2
	Repl. 3	0.006	<.005	0.008	<0.0005	<.005	<0.0005	0.169	0.007	0.00014	0.7	0.6	0.015	0.001	0.009	<.005	0.3	0.3
	Average	---	---	0.007	---	---	---	0.162	---	0.00010	0.7	0.6	0.010	0.001	---	---	0.3	0.2
	S.D.	---	---	0.001	---	---	---	0.006	---	0.00003	0.1	0.1	0.004	0.001	---	---	0.0	0.1

Table 1 (cont.)

Water quality - Silbak Premier -
August 9, 1987

Station Number		TOTICP NI MG/L	DISICP NI MG/L	TOTICP P MG/L	DISICP P MG/L	TOTICP PB MG/L	TOTGF PB MG/L	DISICP PB MG/L	DISGF PB MG/L	TOTICP SI MG/L	DISICP SI MG/L	TOTICP SN MG/L	DISICP SN MG/L	TOTICP SR MG/L	DISICP SR MG/L	TOTICP ZN MG/L	DISICP ZN MG/L
	Repl. 1	<.02	<.02	<.05	<.05	<.02	<0.0005	<.02	<0.0005	1.5	1.5	0.01	<.01	0.217	0.215	<.002	<.002
1	Repl. 2	<.02	<.02	<.05	<.05	<.02	<0.0005	<.02	<0.0005	1.6	1.5	<.01	<.01	0.222	0.215	<.002	<.002
	Repl. 3	<.02	<.02	<.05	<.05	<.02	<0.0005	<.02	<0.0005	1.5	1.4	<.01	<.01	0.210	0.210	<.002	<.002
	Average	---	---	---	---	---	---	---	---	1.5	1.5	---	---	0.216	0.213	---	---
	S.D.	---	---	---	---	---	---	---	---	0.1	0.1	---	---	0.006	0.003	---	---
	Repl. 1	<.02	<.02	<.05	<.05	<.02	0.0005	<.02	<0.0005	0.9	0.4	<.01	<.01	0.062	0.060	<.002	<.002
2	Repl. 2	<.02	<.02	<.05	<.05	<.02	<0.0005	<.02	<0.0005	0.9	0.4	<.01	<.01	0.063	0.059	<.002	<.002
	Repl. 3	<.02	<.02	<.05	<.05	0.03	0.0006	<.02	<0.0005	1.0	0.4	0.04	<.01	0.063	0.060	<.002	<.002
	Average	---	---	---	---	---	0.0006	---	---	0.9	0.4	---	---	0.063	0.060	---	---
	S.D.	---	---	---	---	---	0.0001	---	---	0.1	0.0	---	---	0.001	0.001	---	---
	Repl. 1	<.02	<.02	<.05	<.05	<.02	0.0006	<.02	0.0006	1.4	1.1	<.01	<.01	0.087	0.086	<.002	0.002
3	Repl. 2	<.02	<.02	<.05	<.05	<.02	0.0005	<.02	0.0006	1.4	1.0	<.01	<.01	0.089	0.085	<.002	0.002
	Repl. 3	<.02	<.02	<.05	<.05	<.02	0.0007	<.02	0.0006	1.4	1.1	0.03	<.01	0.088	0.087	<.002	0.002
	Average	---	---	---	---	---	0.0006	---	0.0006	1.4	1.1	---	---	0.088	0.086	---	0.002
	S.D.	---	---	---	---	---	0.0001	---	0.0000	0.0	0.1	---	---	0.001	0.001	---	0.000
	Repl. 1	<.02	<.02	<.05	<.05	0.03	0.0005	<.02	<0.0005	0.7	0.4	<.01	<.01	0.092	0.033	0.005	<.002
4	Repl. 2	<.02	<.02	<.05	<.05	<.02	<0.0005	0.03	<0.0005	0.6	0.5	<.01	<.01	0.034	0.033	<.002	0.003
	Repl. 3	<.02	<.02	<.05	<.05	<.02	<0.0005	0.05	---	0.6	0.5	<.01	<.01	0.033	0.033	<.002	0.005
	Average	---	---	---	---	---	---	0.04	---	0.6	0.5	---	---	0.053	0.033	---	0.004
	S.D.	---	---	---	---	---	---	0.01	---	0.1	0.1	---	---	0.034	0.000	---	0.001
	Repl. 1	<.02	<.02	<.05	<.05	<.02	<0.0005	<.02	<0.0005	0.9	0.5	<.01	<.01	0.063	0.060	<.002	0.003
5	Repl. 2	<.02	<.02	<.05	<.05	<.02	<0.0005	0.04	<0.0005	0.9	0.4	<.01	<.01	0.061	0.060	0.012	0.003
	Repl. 3	<.02	<.02	0.06	<.05	<.02	<0.0005	<.02	<0.0005	0.9	0.4	0.02	<.01	0.064	0.058	<.002	<.002
	Average	---	---	---	---	---	---	---	---	0.9	0.4	---	---	0.063	0.059	---	0.003
	S.D.	---	---	---	---	---	---	---	---	0.0	0.1	---	---	0.002	0.001	---	0.000
	Repl. 1	0.02	0.02	<.05	<.05	<.02	<0.0005	<.02	0.0019	1.6	1.5	<.01	<.01	0.239	0.231	<.002	<.002
6	Repl. 2	<.02	0.04	0.06	<.05	0.04	0.0005	0.03	0.0019	1.8	1.5	0.02	0.01	0.244	0.230	<.002	0.002
	Repl. 3	<.02	0.02	<.05	<.05	<.02	0.0006	0.03	0.0005	1.7	1.5	<.01	0.02	0.238	0.229	0.004	<.002
	Average	---	0.03	---	---	---	0.0006	0.03	0.0014	1.7	1.5	---	0.02	0.240	0.230	---	---
	S.D.	---	0.01	---	---	---	0.0001	0.00	0.0008	0.1	0.0	---	0.01	0.003	0.001	---	---
	Repl. 1	<.02	<.02	<.05	0.06	0.02	0.0046	<.02	0.0023	1.5	1.3	<.01	0.01	0.179	0.167	0.336	0.269
7	Repl. 2	<.02	<.02	0.06	<.05	0.03	0.0050	<.02	0.0022	1.4	1.3	0.03	<.01	0.174	0.166	0.337	0.269
	Repl. 3	0.04	<.02	<.05	<.05	0.06	---	<.02	0.0022	1.5	1.3	<.01	<.01	0.177	0.164	0.339	0.270
	Average	---	---	---	---	0.04	0.0048	---	0.0022	1.5	1.3	---	---	0.177	0.166	0.337	0.269
	S.D.	---	---	---	---	0.02	0.0003	---	0.0001	0.1	0.0	---	---	0.003	0.002	0.002	0.001
	Repl. 1	0.02	<.02	<.05	<.05	<.02	0.0013	<.02	0.0011	1.6	1.1	0.02	<.01	0.108	0.102	0.078	0.070
8	Repl. 2	<.02	<.02	0.10	<.05	0.03	0.0015	<.02	0.0009	1.6	0.9	0.02	<.01	0.107	0.098	0.078	0.067
	Repl. 3	0.03	<.02	0.06	<.05	0.03	0.0014	<.02	0.0009	1.6	1.0	0.05	<.01	0.108	0.100	0.083	0.068
	Average	0.03	---	0.08	---	0.03	0.0014	---	0.0010	1.6	1.0	0.03	---	0.108	0.100	0.080	0.068
	S.D.	0.01	---	0.03	---	0.00	0.0001	---	0.0001	0.0	0.1	0.02	---	0.001	0.002	0.003	0.002
	Repl. 1	<.02	<.02	<.05	<.05	0.04	<0.0005	<.02	<0.0005	0.8	0.4	<.01	<.01	0.047	0.045	<.002	0.006
9	Repl. 2	0.02	<.02	<.05	<.05	0.02	<0.0005	<.02	<0.0005	0.7	0.4	0.01	<.01	0.048	0.045	<.002	0.006
	Repl. 3	0.03	<.02	<.05	<.05	0.04	---	<.02	<0.0005	0.7	0.4	0.06	<.01	0.047	0.044	<.002	0.007
	Average	0.03	---	---	---	0.03	---	---	---	0.7	0.4	0.04	---	0.047	0.045	---	0.006
	S.D.	0.01	---	---	---	0.01	---	---	---	0.1	0.0	0.04	---	0.001	0.001	---	0.001

Table 2

Water quality - Silbak Premier -
August 9, 1987

Station Number		ALK MG/L	DISICP HC MG/L	DISICP HT MG/L	PH REL.U.	COND UMHO/C	TR MG/L	NFR MG/L	NH3 MG/L	NO2 MG/L	NO23 MG/L	SO4 MG/L	CN MG/L	CNS MG/L
	Repl. 1	51.8	54.3	54.5	7.8	113	72	6	<.005	<.005	<.005	5	<0.03	<0.5
1	Repl. 2	51.8	54.4	54.7	7.8	113	74	<5	<.005	<.005	<.005	5	<0.03	<0.5
	Repl. 3	51.8	52.8	53.1	7.8	113	71	<5	<.005	<.005	<.005	5	<0.03	<0.5
	Average	51.8	53.8	54.1	7.8	113	72	--	---	---	---	5	---	--
	S.D.	0.0	0.9	0.9	---	0	2	--	---	---	---	0	---	--
	Repl. 1	29.4	20.3	20.3	9.0	68	-	-	<.005	<.005	<.005	5	<0.03	<0.5
2	Repl. 2	18.3	20.1	20.2	7.3	47	34	<5	<.005	<.005	<.005	4	<0.03	<0.5
	Repl. 3	18.3	20.1	20.2	7.3	48	30	<5	<.005	<.005	<.005	4	<0.03	<0.5
	Average	22.0	20.2	20.2	7.9	54	32	--	---	---	---	4	---	--
	S.D.	6.4	0.1	0.1	---	12	3	--	---	---	---	1	---	--
	Repl. 1	31.0	29.7	29.9	7.9	68	37	<5	<.005	<.005	<.005	2	<0.03	<0.5
3	Repl. 2	30.5	29.2	29.3	7.7	68	39	<5	<.005	<.005	<.005	2	<0.03	<0.5
	Repl. 3	30.5	29.5	29.6	7.7	65	41	<5	<.005	<.005	<.005	2	<0.03	<0.5
	Average	30.7	29.5	29.6	7.8	67	39	--	---	---	---	2	---	--
	S.D.	0.3	0.3	0.3	---	2	2	--	---	---	---	0	---	--
	Repl. 1	8.1	9.7	9.6	6.8	25	14	<5	<.005	<.005	<.005	3	<0.03	<0.5
4	Repl. 2	8.6	10.0	10.1	7.0	25	12	<5	<.005	<.005	<.005	3	<0.03	<0.5
	Repl. 3	8.6	9.8	9.8	6.9	25	12	<5	<.005	<.005	<.005	3	<0.03	<0.5
	Average	8.4	9.8	9.8	6.9	25	13	--	---	---	---	3	---	--
	S.D.	0.3	0.2	0.2	---	0	1	--	---	---	---	0	---	--
	Repl. 1	18.8	20.5	20.6	7.4	48	26	<5	<.005	<.005	<.005	4	<0.03	<0.5
5	Repl. 2	18.8	20.3	20.4	7.4	48	23	<5	<.005	<.005	<.005	4	<0.03	<0.5
	Repl. 3	18.8	19.7	19.9	7.4	48	22	<5	<.005	<.005	<.005	4	<0.03	<0.5
	Average	18.8	20.2	20.3	7.4	48	24	--	---	---	---	4	---	--
	S.D.	0.0	0.4	0.4	---	0	2	--	---	---	---	0	---	--
	Repl. 1	56.8	58.1	58.6	8.0	128	81	<5	<.005	<.005	0.012	6	<0.03	<0.5
6	Repl. 2	56.3	57.4	57.7	8.0	125	77	<5	<.005	<.005	0.013	6	<0.03	<0.5
	Repl. 3	56.3	57.3	57.7	8.0	125	83	<5	<.005	<.005	0.011	6	<0.03	<0.5
	Average	56.5	57.6	58.0	8.0	126	80	--	---	---	0.012	6	---	--
	S.D.	0.3	0.4	0.5	---	2	3	--	---	---	0.001	0	---	--
	Repl. 1	44.2	56.8	57.5	7.9	128	72	<5	<.005	<.005	<.005	14	<0.03	<0.5
7	Repl. 2	46.1	56.1	56.8	7.9	128	67	<5	<.005	<.005	<.005	14	<0.03	<0.5
	Repl. 3	44.7	55.7	56.5	7.9	128	68	<5	<.005	<.005	<.005	14	<0.03	<0.5
	Average	45.0	56.2	56.9	7.9	128	69	--	---	---	---	14	---	--
	S.D.	1.0	0.6	0.5	---	0	3	--	---	---	---	0	---	--
	Repl. 1	29.9	32.8	33.1	7.7	78	40	<5	<.005	<.005	<.005	6	<0.03	<0.5
8	Repl. 2	32.5	31.2	31.5	7.6	75	34	<5	<.005	<.005	<.005	6	<0.03	<0.5
	Repl. 3	29.9	32.0	32.3	7.6	75	37	<5	<.005	<.005	<.005	6	<0.03	<0.5
	Average	30.8	32.0	32.3	7.6	76	37	--	---	---	---	6	---	--
	S.D.	1.5	0.8	0.8	---	2	3	--	---	---	---	0	---	--
	Repl. 1	11.7	13.3	13.4	7.3	34	12	<5	<.005	<.005	<.005	3	<0.03	<0.5
9	Repl. 2	12.2	13.2	13.3	7.2	34	<5	<5	<.005	<.005	<.005	3	<0.03	<0.5
	Repl. 3	11.7	13.4	13.6	7.2	34	<5	<5	<.005	<.005	<.005	3	<0.03	<0.5
	Average	11.9	13.3	13.4	7.2	34	--	--	---	---	---	3	---	--
	S.D.	0.3	0.1	0.2	---	0	--	--	---	---	---	0	---	--

Table 3

Water quality - Silbak Premier -
August 9, 1987

Station Number		TOTGF AG MG/L	DISGF AG MG/L	TOTICP AL MG/L	DISICP AL MG/L	TOTICP AS MG/L	DISICP AS MG/L	TOTICP BA MG/L	DISICP BA MG/L	TOTICP CA MG/L	DISICP CA MG/L	TOTICP CD MG/L	TOTGF CD MG/L	DISICP CD MG/L	DISGF CD MG/L	TOTICP CO MG/L	DISICP CO MG/L
Level #6	29	0.0003	0.0003	0.36	<.05	<.05	<.05	0.035	0.03	64.1	64.4	0.039	-	0.032	-	<.005	<.005
Level #4	30	0.0011	0.0004	0.28	<.05	<.05	<.05	0.052	0.03	54.9	54.8	0.016	-	0.012	-	<.005	<.005

Water quality - Silbak Premier -
August 9, 1987

Station Number		TOTICP CR MG/L	DISICP CR MG/L	TOTICP CU MG/L	TOTGF CU MG/L	DISICP CU MG/L	DISGF CU MG/L	TOTICP FE MG/L	DISICP FE MG/L	TOTHG HG MG/L	TOTICP MG MG/L	DISICP MG MG/L	TOTICP MN MG/L	DISICP MN MG/L	TOTICP MO MG/L	DISICP MO MG/L	TOTICP NA MG/L	DISICP NA MG/L
Level #6	29	<.005	<.005	0.078	-	<.005	-	1.980	<.005	0.00010	5.9	5.7	0.291	0.243	<.005	0.008	6.3	6.3
Level #4	30	<.005	<.005	0.038	-	0.007	-	0.763	<.005	0.00021	3.5	3.2	0.204	0.135	<.005	<.005	1.2	1.2

Water quality - Silbak Premier -
August 9, 1987

Station Number		TOTICP NI MG/L	DISICP NI MG/L	TOTICP P MG/L	DISICP P MG/L	TOTICP PB MG/L	TOTGF PB MG/L	DISICP PB MG/L	DISGF PB MG/L	TOTICP SI MG/L	DISICP SI MG/L	TOTICP SN MG/L	DISICP SN MG/L	TOTICP SR MG/L	DISICP SR MG/L	TOTICP ZN MG/L	DISICP ZN MG/L
Level #6	29	0.03	0.04	0.07	<.05	<.02	0.0098	<.02	0.0021	2.4	2.2	<.01	<.01	1.450	1.490	3.670	2.720
Level #4	30	<.02	<.02	<.05	<.05	0.05	-	<.02	0.0025	2.3	2.0	0.02	<.01	0.452	0.456	1.440	1.250

Water quality - Silbak Premier -
August 9, 1987

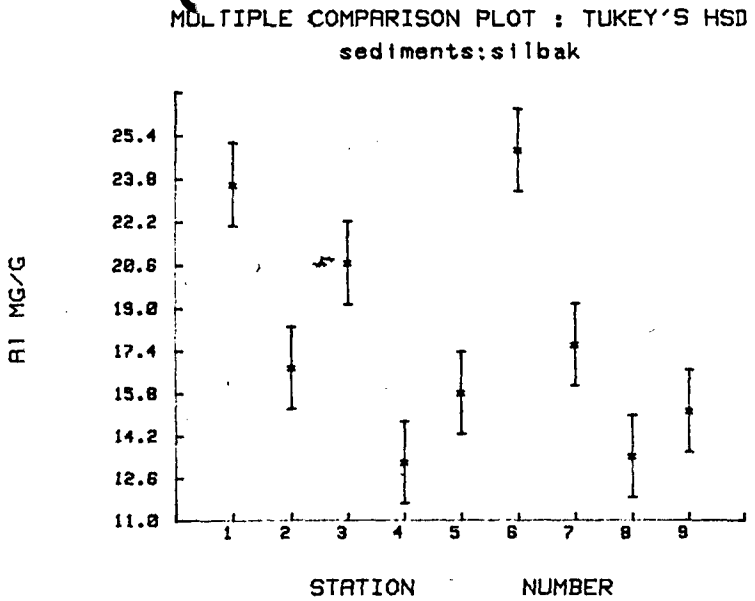
Station Number		ALK MG/L	DISICP HC MG/L	DISICP HT MG/L	PH REL.U.	COND UMHO/C	TR MG/L	NFR MG/L	NH3 MG/L	NO2 MG/L	NO23 MG/L	SO4 MG/L	CN MG/L	CNS MG/L
Level #6	29	114.0	184.0	191.0	8.1	395	205	<5	<.005	<.005	0.030	84	<0.03	<0.5
Level #4	30	115.0	150.0	153.0	8.0	305	268	<5	<.005	<.005	0.048	51	<0.03	<0.5

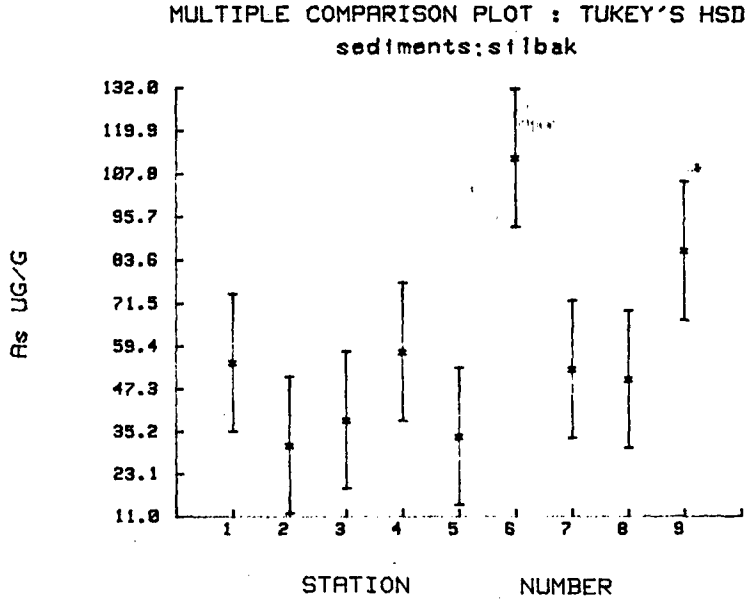
Table 4 Silbak sediments (< 150 dry weight - August 9, 1987

Station Number	Sample Number	AL UG/G	AS UG/G	BA UG/G	BE UG/G	CA UG/G	CD UG/G	CO UG/G	CR UG/G	CU UG/G	FE UG/G	HG UG/G	MG UG/G	MN UG/G	MO UG/G
	1	21000	45	583	0.5	11500	1.9	19.2	45.6	22.4	41900	0.197	7310	2840	8.1
1	2	23200	55	517	0.5	10100	2.1	21.3	58.1	25.6	45500	0.160	8510	2630	6.1
	3	24400	58	764	0.6	14600	2.0	16.0	19.3	25.4	46600	0.225	7160	2940	6.5
	4	25700	61	733	0.6	15700	1.0	19.4	15.0	26.0	46100	0.237	6720	3450	3.4
	Average	23575	55	649	0.6	12975	1.8	19.0	34.5	24.9	45025	0.205	7425	2965	6.0
	S.D.	1997	7	118	0.1	2615	0.5	2.2	20.7	1.7	2131	0.034	765	348	2.0
	5	14600	29	305	0.6	3850	0.7	14.0	17.2	23.1	45200	0.093	8850	1120	5.7
2	6	20200	48	468	0.8	4960	3.3	18.2	65.2	46.9	51900	0.140	10400	1610	6.5
	7	16400	29	446	0.6	4290	2.2	14.0	17.0	27.0	46900	0.097	9140	1310	<.8
	8	15800	19	302	0.6	3800	2.2	13.0	17.5	31.5	44700	0.130	9340	1150	1.8
	Average	16750	31	380	0.7	4225	2.1	14.8	29.2	32.1	47175	0.115	9433	1298	4.7
	S.D.	2419	12	89	0.1	537	1.1	2.3	24.0	10.4	3288	0.024	676	224	2.5
	9	21600	24	866	0.6	7040	1.0	8.3	14.0	24.8	50900	0.308	7350	1980	1.9
3	10	19800	36	698	0.5	6130	2.3	6.6	16.0	23.3	46600	0.307	7300	1550	5.0
	11	21000	55	907	0.5	7050	0.6	13.0	15.0	25.0	46700	0.390	7510	1810	1.0
	12	20300	39	814	0.5	6000	1.0	15.0	15.0	22.2	54800	0.198	7520	2030	2.0
	Average	20675	39	821	0.5	6555	1.2	10.7	15.0	23.8	49750	0.301	7420	1843	2.5
	S.D.	789	13	91	0.0	568	0.7	3.9	0.8	1.3	3918	0.079	112	217	1.7
	13	13100	49	455	0.4	3100	2.0	9.5	22.6	32.6	40900	0.259	7140	949	3.6
4	14	13600	48	548	0.4	3070	3.9	7.1	25.9	30.0	42200	0.223	7320	941	4.0
	15	13500	69	597	0.4	3240	3.0	16.0	27.2	35.9	43500	0.281	7250	947	3.3
	16	12500	65	480	0.4	2890	2.9	13.0	25.9	27.5	39300	0.207	6630	819	<.8
	Average	13175	58	520	0.4	3075	3.0	11.4	25.4	31.5	41475	0.243	7085	914	3.6
	S.D.	499	11	65	0.0	144	0.8	3.9	2.0	3.6	1797	0.034	312	63	0.4
	17	15300	19	316	0.6	4630	0.8	16.0	14.0	28.2	45200	0.095	9950	1240	<.8
5	18	16000	34	312	0.6	4730	1.9	12.0	13.0	25.1	45100	0.099	10000	1280	<.8
	19	16700	31	368	0.7	4900	2.0	21.0	16.0	27.3	47900	0.177	10200	1320	<.8
	20	15200	51	304	0.7	4550	2.0	15.0	13.0	25.5	46900	0.140	9850	1210	2.1
	Average	15800	34	325	0.7	4703	1.7	16.0	14.0	26.5	46275	0.128	10000	1263	--
	S.D.	698	13	29	0.1	151	0.6	3.7	1.4	1.5	1362	0.039	147	48	--
	21	24600	81	683	0.6	10400	1.0	20.0	11.0	33.2	55300	0.421	7760	3120	4.0
6	22	24700	98	758	0.6	11600	3.5	23.8	11.0	59.5	60100	0.425	7380	4400	2.0
	23	24100	130	876	0.7	13200	2.9	24.2	11.0	84.2	58400	0.422	6920	4900	3.1
	24	26000	140	814	0.7	12400	3.3	25.8	12.0	113.0	61300	0.473	7590	3900	3.3
	Average	24850	112	783	0.7	11900	2.7	23.5	11.3	72.5	58775	0.435	7413	4080	3.1
	S.D.	810	27	82	0.1	1194	1.1	2.5	0.5	34.1	2604	0.025	363	759	0.8
	25	19500	52	530	0.5	5170	40.0	23.8	14.0	394.0	52100	1.140	6730	2760	4.0
7	26	16800	33	411	0.4	4530	12.0	16.0	14.0	96.5	40200	1.450	7630	1330	<.8
	27	17200	81	1070	0.5	5580	44.9	21.6	11.0	361.0	61800	1.890	6520	2590	2.8
	28	16900	45	442	0.3	4440	15.0	12.0	14.0	117.0	40600	0.878	7340	1370	<.8
	Average	17600	53	613	0.4	4930	28.0	18.4	13.3	242.1	48675	1.340	7055	2013	3.4
	S.D.	1278	20	309	0.1	542	16.9	5.4	1.5	157.1	10345	0.435	518	768	0.8
	29	12400	46	429	0.4	6910	7.2	22.7	6.8	45.5	54600	0.215	9530	951	<.8
8	30	12800	30	536	0.4	8240	5.4	18.8	5.5	38.9	45600	0.288	9530	1080	1.7
	31	13700	83	595	0.5	6870	12.0	25.9	7.0	102.0	64100	0.964	9440	1380	<.8
	32	14800	41	801	0.5	6840	9.2	21.9	7.6	81.1	60700	0.380	9900	1130	2.0
	Average	13425	50	590	0.5	7215	8.5	22.3	6.7	66.9	56250	0.462	9600	1135	1.9
	S.D.	1066	23	156	0.1	684	2.8	2.9	0.9	29.9	8115	0.342	204	180	0.2
	33	15600	88	625	0.5	4320	6.9	17.6	21.7	53.8	55100	0.382	8480	1320	2.9
9	34	15000	77	617	0.5	4070	6.6	16.2	20.0	53.5	54000	0.302	8070	1310	2.6
	35	15700	95	553	0.5	4590	7.2	18.4	20.6	75.5	59400	0.417	8590	1310	3.6
	36	14200	85	490	0.4	4140	7.1	16.3	18.2	57.0	55300	0.309	8210	1270	1.9
	Average	15125	86	571	0.5	4280	7.0	17.1	20.1	60.0	55950	0.353	8338	1303	2.8
	S.D.	690	7	63	0.0	232	0.3	1.1	1.5	10.5	2370	0.056	239	22	0.7

Table 4 (cont.) Silbak sediments (< 150 µ) dry weight - August 9, 1987

Station Number	Sample Number	NA UG/G	NI UG/G	P UG/G	PB UG/G	SI UG/G	SN UG/G	SR UG/G	TI UG/G	V UG/G	ZN UG/G	SFR MG/KG	SVR MG/KG	TN UG/G
	1	5520	20	1110	32	720	<2	139	516	49.1	256	776000	224000	4100
1	2	4490	35	1160	38	840	<2	124	609	54.3	169	838000	162000	3200
	3	1700	10	1290	58	680	<2	178	548	52.7	249	753000	247000	5000
	4	100	4	1360	46	750	<2	188	505	52.4	228	726000	274000	7200
	Average	2953	17	1230	44	748	--	157	545	52.1	226	773250	226750	4875
	S.D.	2494	14	115	11	68	--	31	47	2.2	40	47759	47759	1715
	5	100	21	1140	35	510	<2	30	393	61.5	189	984000	16500	230
2	6	1810	63	1340	50	540	<2	50	480	66.7	221	972000	27700	690
	7	170	16	1250	49	460	<2	38	436	66.1	192	978000	22500	580
	8	620	22	1170	32	460	<2	32	367	57.4	195	985000	14900	210
	Average	675	31	1225	42	493	--	38	419	62.9	199	979750	20400	428
	S.D.	791	22	90	9	39	--	9	50	4.4	15	6021	5864	244
	9	280	10	1310	39	530	<2	69	429	66.5	197	899000	101000	2800
3	10	100	10	1250	41	500	<2	58	550	57.4	178	915000	85500	3000
	11	1200	10	1360	40	540	<2	68	495	59.5	201	897000	103000	1800
	12	360	9	1320	49	520	6	58	444	67.6	215	929000	71100	1800
	Average	485	10	1310	42	523	--	63	480	62.8	198	910000	90150	2350
	S.D.	489	1	45	5	17	--	6	55	5.1	15	15011	14915	640
	13	60	29	1180	77	470	<2	40	41	26.0	270	981000	18700	200
4	14	90	36	1280	87	450	<2	33	51	27.1	287	982000	17600	240
	15	80	34	1340	100	430	<2	34	52	28.7	300	983000	16900	210
	16	70	35	1130	93	460	<2	30	38	27.6	283	525000	475000	200
	Average	75	34	1233	89	453	--	34	46	27.4	285	867750	132050	213
	S.D.	13	3	95	10	17	--	4	7	1.1	12	228501	228635	19
	17	100	24	1220	40	560	<2	38	499	63.1	193	984000	16200	220
5	18	100	20	1240	49	510	<2	41	512	65.7	205	982000	18100	280
	19	100	31	1330	50	490	<2	43	541	68.3	229	981000	18600	300
	20	100	26	1280	43	520	<2	37	505	66.6	191	986000	14100	200
	Average	100	25	1268	46	520	--	40	514	65.9	205	983250	16750	250
	S.D.	0	5	49	5	29	--	3	19	2.2	17	2217	2047	48
	21	100	7	1370	86	950	<2	131	486	50.7	285	868000	132000	3000
6	22	190	8	1490	110	890	<2	146	445	50.0	351	835000	165000	3200
	23	390	7	1490	120	910	<2	166	399	46.9	386	797000	203000	4300
	24	220	10	1550	110	990	<2	157	480	53.3	356	840000	160000	3400
	Average	**225**	8	**1475**	**107**	**935**	--	**150**	**453**	**50.2**	**345**	**835000**	**165000**	**3475**
	S.D.	121	1	75	14	44	--	15	40	2.6	43	29200	29200	574
	25	210	20	1160	1320	1000	<2	51	739	47.9	4600	958000	41500	900
7	26	200	10	1040	365	540	<2	43	765	48.6	1490	978000	21800	570
	27	100	20	1350	1280	710	<2	62	664	47.5	4010	957000	43300	1100
	28	90	22	1040	484	490	<2	43	793	44.9	1710	980000	20100	390
	Average	150	18	1148	862	685	--	50	740	47.2	2953	968250	31675	740
	S.D.	64	5	146	508	230	--	9	55	1.6	1583	12447	12425	320
	29	100	6	1290	265	560	10	45	771	75.5	554	991000	9000	90
8	30	220	9	1310	150	490	<2	53	784	70.5	532	994000	5900	200
	31	260	7	1400	463	480	<2	51	785	77.9	1230	984000	16400	250
	32	340	7	1520	341	500	<2	58	1090	101.0	883	984000	16300	350
	Average	230	7	1380	305	508	--	52	858	81.2	800	988250	11900	223
	S.D.	100	1	105	132	36	--	6	155	13.5	329	5058	5292	108
	33	1100	30	1290	254	430	<2	46	316	52.3	715	981000	19200	320
9	34	270	30	1280	226	410	<2	44	299	48.6	625	981000	19200	290
	35	340	23	1340	383	460	<2	45	339	52.7	652	979000	21100	320
	36	170	23	1290	207	460	<2	37	285	47.6	710	982000	18400	200
	Average	470	27	1300	268	440	--	43	310	50.3	676	980750	19475	283
	S.D.	426	4	27	79	24	--	4	23	2.6	44	1258	1147	57


MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak
Al MG/G
25.4
23.8
22.2
20.6
19.0
17.4
15.8
14.2
12.6
11.0
1 2 3 4 5 6 7 8 9
STATION NUMBER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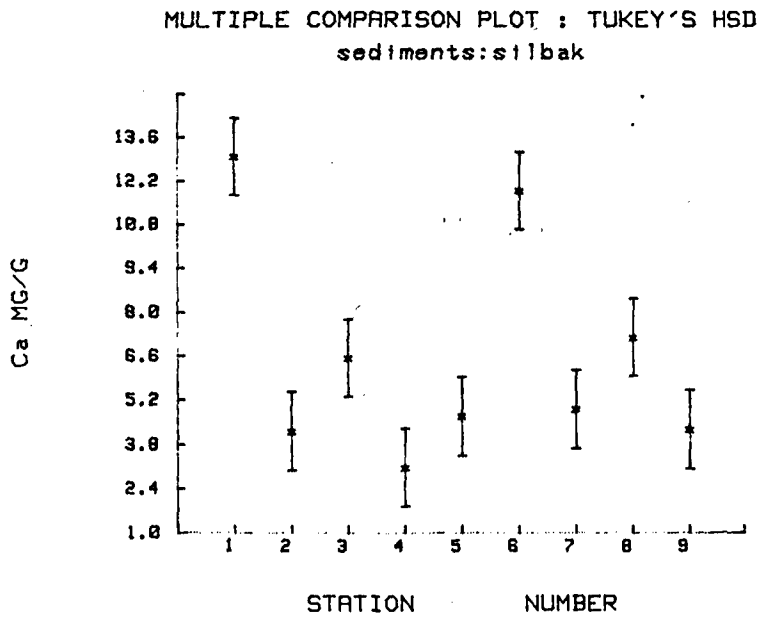
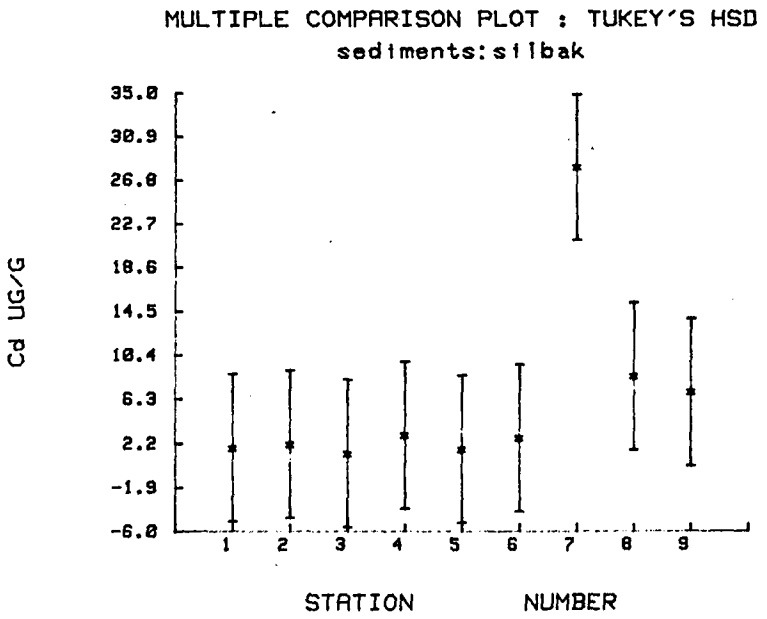
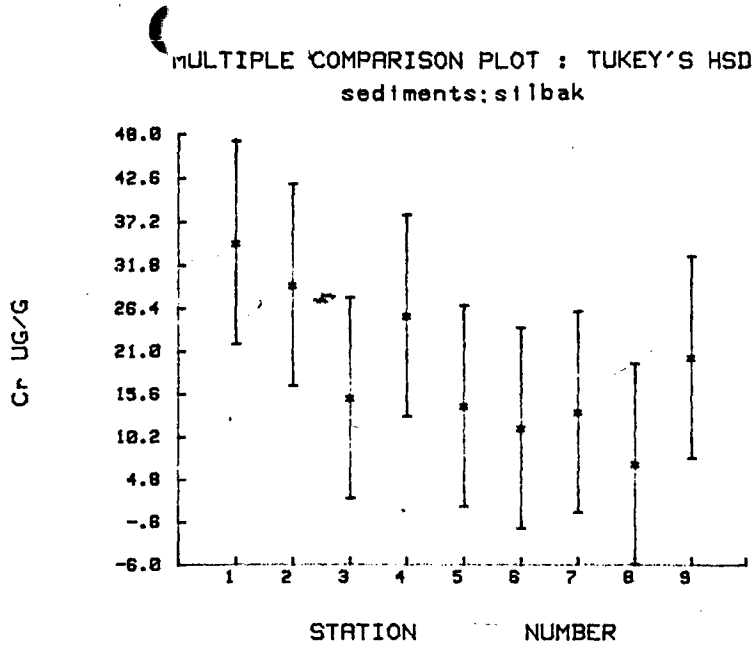
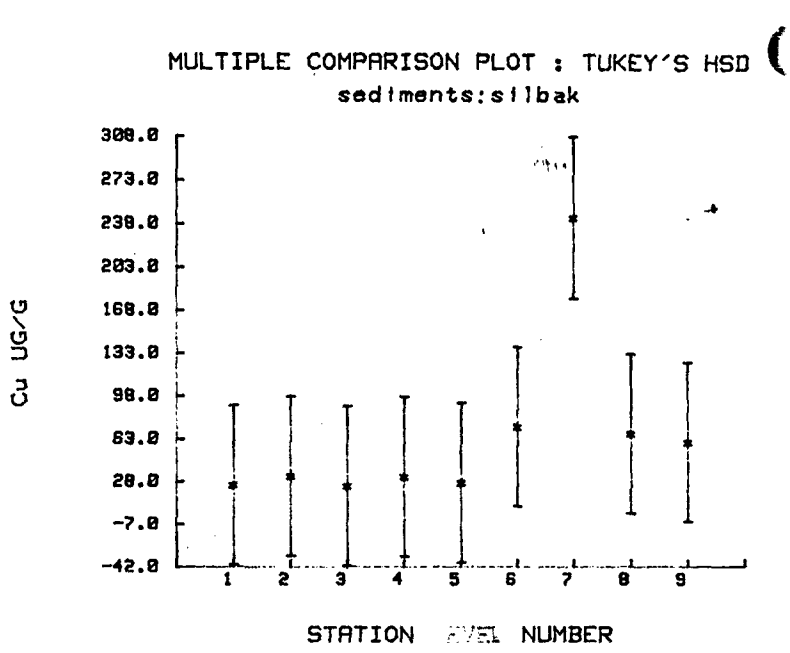
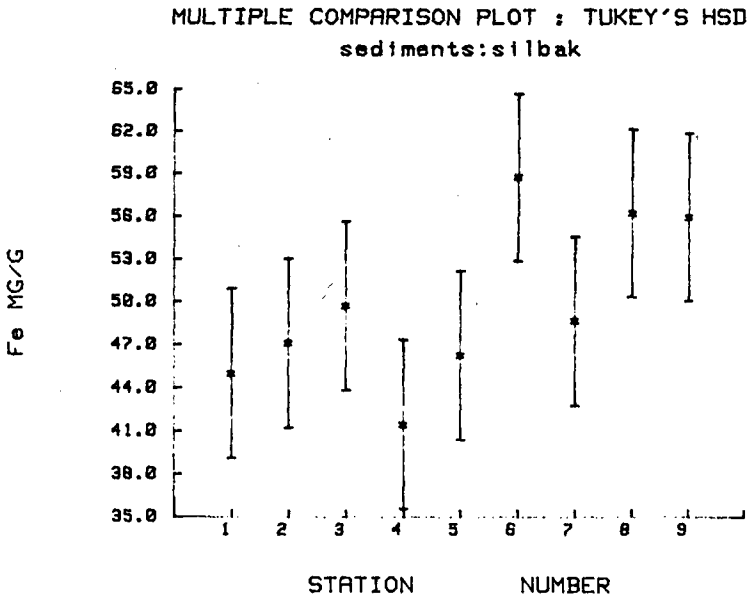
sediments:silbak
As UG/G
132.0
119.9
107.8
95.7
83.6
71.5
59.4
47.3
35.2
23.1
11.0
1 2 3 4 5 6 7 8 9
STATION NUMBER

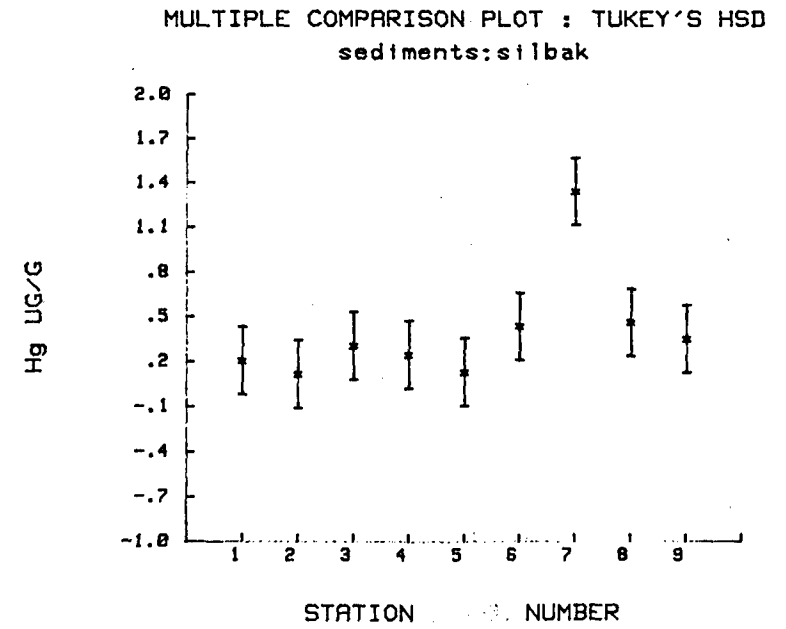

MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak
Ca MG/G
13.6
12.2
10.8
9.4
8.0
6.6
5.2
3.8
2.4
1.0
1 2 3 4 5 6 7 8 9
STATION NUMBER


MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak
Cd UG/G
35.0
30.9
26.8
22.7
18.6
14.5
10.4
6.3
2.2
-1.9
-6.0
1 2 3 4 5 6 7 8 9
STATION NUMBER

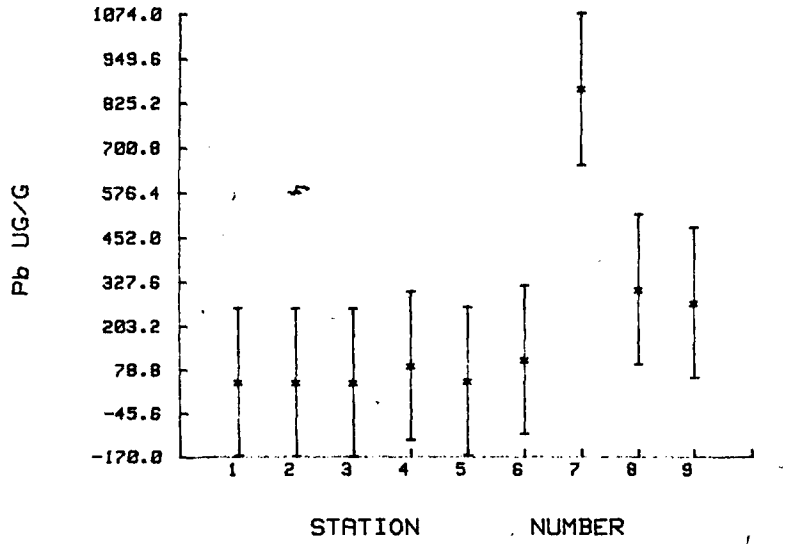

MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak
Cr UG/G
48.0
42.6
37.2
31.8
26.4
21.0
15.6
10.2
4.8
-.6
-6.0
1 2 3 4 5 6 7 8 9
STATION NUMBER


MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak
Cu UG/G
308.0
273.0
238.0
203.0
168.0
133.0
98.0
63.0
28.0
-7.0
-42.0
1 2 3 4 5 6 7 8 9
STATION NUMBER

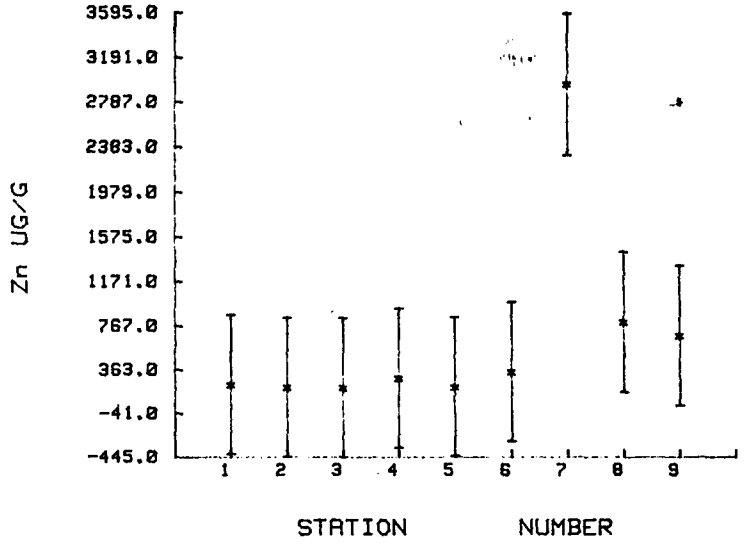

MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak
Fe MG/G
65.0
62.0
59.0
56.0
53.0
50.0
47.0
44.0
41.0
38.0
35.0
1 2 3 4 5 6 7 8 9
STATION NUMBER


MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak
Hg UG/G
2.0
1.7
1.4
1.1
.8
.5
.2
-.1
-.4
-.7
-1.0
1 2 3 4 5 6 7 8 9
STATION NUMBER

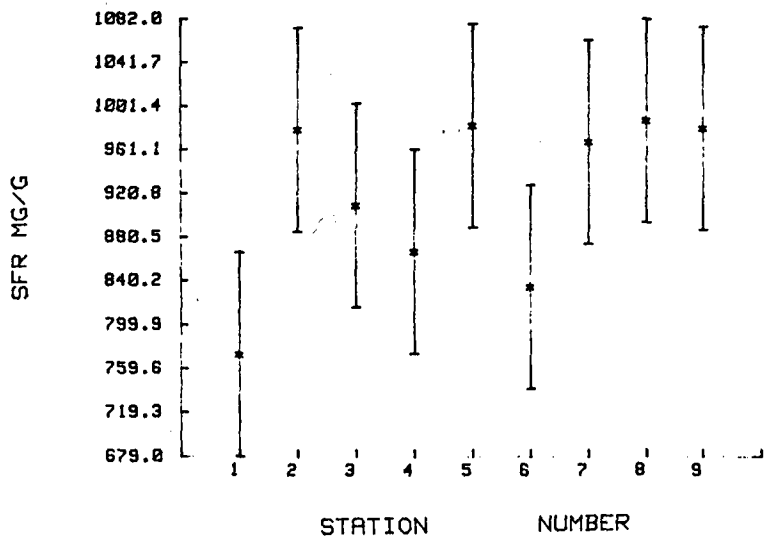
MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak



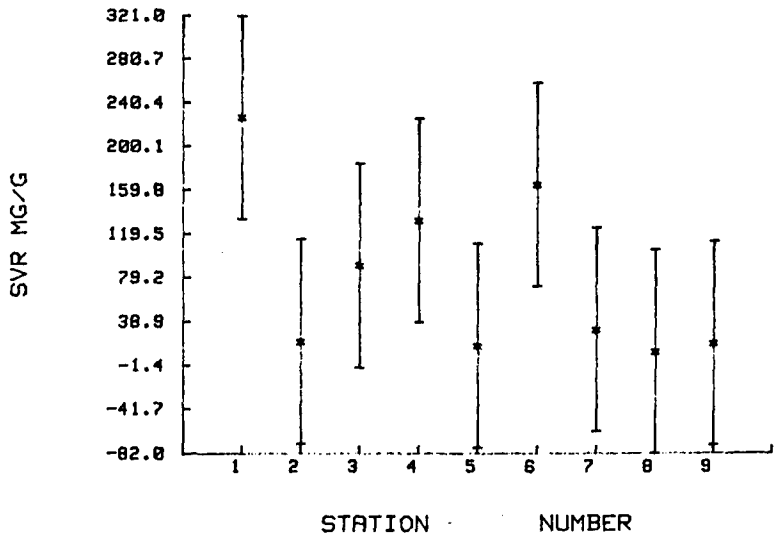
MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak



MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak



MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak



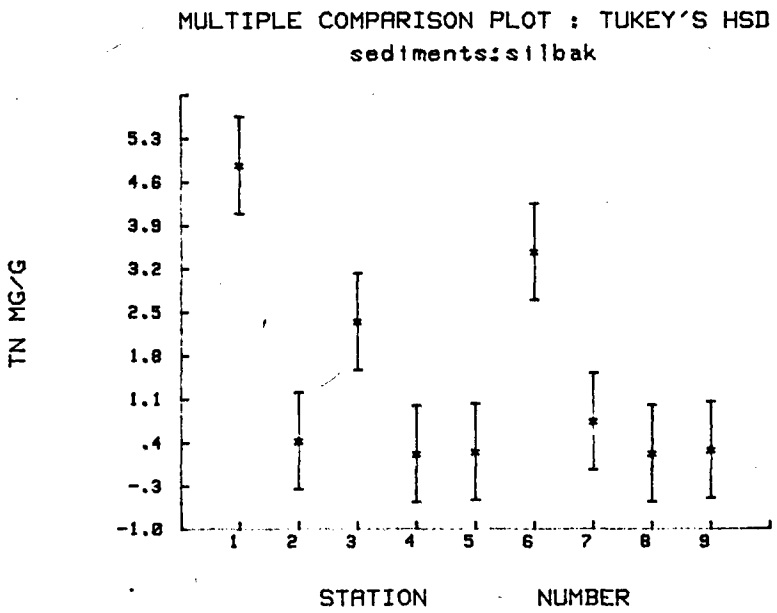

MULTIPLE COMPARISON PLOT : TUKEY'S HSD
sediments:silbak
TN MG/G
5.3
4.6
3.9
3.2
2.5
1.8
1.1
.4
-.3
-1.0
1
2
3
4
5
6
7
8
9
STATION NUMBER

Table 5

Silbak Sediments (< 150 um) - Statistical Station Separations
August 9, 1987

Parameter	Station	Separation
Aluminum	4	a
	8	a
	9	ab
	5	ab
	2	b
	7	bc
	3	cd
	1	de
	6	e
Arsenic	2	a
	5	a
	3	a
	8	ab
	7	ab
	1	ab
	4	ab
	9	bc
	6	c
Calcium	4	a
	2	ab
	9	ab
	5	ab
	7	abc
	3	bc
	8	c
	6	d
	1	d
Cadmium	3	a
	5	a
	1	a
	2	a
	6	a
	4	a
	9	a
	8	a
	7	b
Chromium	8	a
	6	ab
	7	ab
	5	ab
	3	ab
	9	ab
	4	ab
	2	ab
	1	b
Copper	3	a
	1	a
	5	a
	4	a
	2	a
	9	a
	8	a
	6	a
	7	b
Iron	4	a
	1	ab
	5	ab
	2	abc
	7	abc
	3	abc
	9	bc
	8	bc
	6	c
Mercury	2	a
	5	a
	1	a
	4	a
	3	a
	9	a
	6	a
	8	a
	7	b
Lead	2	a
	3	a
	1	a
	5	a
	4	a
	6	a
	9	a
	8	a
	7	b
Zinc	3	a
	2	a
	5	a
	1	a
	4	a
	6	a
	9	a
	8	a
	7	b
SFR	1	a
	6	ab
	4	ab
	3	ab
	7	b
	2	b
	9	b
	5	b
	8	b
SVR	8	a
	5	a
	9	a
	2	a
	7	a
	3	ab
	4	ab
	6	ab
	1	b

Note : The stations are ranked by the lowest mean. The separation is determined by the overlapping confidence intervals.

Table 5 (cont.)

Silbak Sediments (< 150 um) - Statistical Station Separations
August 9, 1987

Parameter	Station	Separation
TN	8	a
	4	a
	5	a
	9	a
	2	a
	7	a
	3	b
	6	bc
	1	c

Note : The stations are ranked by the lowest mean. The separation is determined by the overlapping confidence intervals.