2009

DE BEERS CANADA INC.
VICTOR MINE

MERCURY PERFORMANCE MONITORING
2009 ANNUAL REPORT

AS PER CONDITIONS 7(5) and 7(6) OF
CERTIFICATE OF APPROVAL #3960-7Q4K2G

Submitted to:
Ministry of the Environment
Timmins District Office
Ontario Government Complex, Hwy. 101E
P.O. Bag 3080
South Porcupine, Ontario, P0N 1H0

and

Chief of Attawapiskat First Nation
First Nation Office
Attawapiskat, Ontario, P0L 1A0

Submitted by:
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June 2009
TC91501

June 29, 2010
TC91501

Mr. Denis Durocher, District Manager
Ministry of the Environment
Ontario Government Complex
Highway 101E
South Porcupine, Ontario
P0N 1H0

Chief Theresa Hall
Attawapiskat First Nation
First Nation Office
Attawapiskat, Ontario
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Dear Mr. Durocher / Chief Hall:

Re: Mercury Performance Monitoring 2009 Annual Report, Certificate of Approval #3960-7Q4K2G, Conditions 7(5) and 7(6)

Please find enclosed the Annual Mercury Performance Monitoring Report for the Victor Mine for the 2009 reporting period. The report addresses Conditions 7(5) and 7(6) of Certificate of Approval #3960-7Q4K2G, and covers monitoring data relating to peat pore water, surface water systems, groundwater (well field) discharge and fish.

All monitoring results are consistent with permit application expectations regarding mine dewatering activities, showing no adverse effects of mine dewatering on area mercury levels in peatlands, surface waters, or fish flesh for the 2009 monitoring period.

We would be pleased to discuss any aspects of the above with the Ministry of the Environment or the Attawapiskat First Nation.

Please contact either myself or Sheila Daniel at 905-568-2929.

Regards,

AMEC Earth & Environmental,
a Division of AMEC Americas Limited
On behalf of De Beers Canada Inc.

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1.0 INTRODUCTION

This report was prepared by AMEC Earth & Environmental Limited (AMEC) on behalf of De Beers Canada Inc. (De Beers), pursuant to the requirements of Conditions 7(5) and 7(6) of Certificate of Approval (C. of A.) #3960-7Q4K2G. The report is the second in a series of annual mercury monitoring reports that will be prepared for the Victor Mine. This second annual report summarizes all Victor Mine site mercury monitoring data collected for the year 2009, and also provides summaries of earlier data and trends where appropriate.

A broad-based, rigorous mercury monitoring program was established for the De Beers Victor Mine because of concerns raised during the provincial permitting process, regarding the possible influences of mine dewatering activities on muskeg system hydrodynamics and associated mercury chemodynamics. In particular, concerns have been expressed that should mine dewatering lead to extensive "drying out" of the local muskeg ecosystem, then there could be a potential for the release of increased quantities of mercury to area receiving waters above those that occur naturally. Mercury is present in area peatlands in the baseline condition as a result of the long-range aerial transport of emissions from natural and anthropogenic sources unrelated to activities of the Victor Mine. ✓

AMEC and De Beers have previously provided evidence to support the position that mine dewatering activities were not likely to result in a condition that would substantively increase mercury release rates to area receiving waters, and that if evidence of such substantive release rates was to occur, then mitigation measures would be implemented to prevent or arrest the aggravating condition. The Victor Mine mercury monitoring program is designed to test De Beers' position that mine dewatering is not likely to substantively increase mercury release rates to area receiving waters.

Data collected up to the end of 2009 thus far continue to support the De Beers' position that mine dewatering is unlikely to result in substantive increases in mercury release to area surface waters, as described in detail in the sections that follow.

As an added note, laboratory services for the 2009 water sample program were conducted in part by Flett Research Ltd. in Winnipeg (to approximately the end of April 2009), and by Dr Brian Branfireun's laboratory at the University of Toronto (approximately May 2009 onwards). All fish flesh analyses were conducted at Dr. Branfireun's laboratory. Both laboratories are recognized for their specialty of ultra-trace analyses for mercury.

Data reported as "less than values" (i.e., less than the detection limit values) by either laboratory are shown as being at the reported detection limit in all tables in this document. Lower end values are therefore conservative. Detection limits provided by Flett Research for water samples varied with the samples being analyzed with some detection limits being shown as a low as 0.00 ng/L, measured to two decimal places. Detection limits provided by Dr. Branfireun's laboratory were set at two levels: "limit of quantification" – 0.0169 ng/L, and "method detection limit" (MDL) – 0.0054 ng/L. Values less than the MDL were reported by Dr. Branfireun's

laboratory as "non-detect" and are presented in the tables of this report as 0.005 ng/L. Values reported as detected by Dr. Branfireun's laboratory as presented in the tables as 0.017 ng/L.

For readers unfamiliar with these units of measurement:

ng/L represents nanograms per Litre of water, which can also be expressed as parts per trillion (ppt) or 1 part of material in 1,000,000,000,000 parts of water.

ug/G represents micrograms per gram of solids (e.g. fish flesh), which can also be expressed as parts per trillion (ppt) or 1 par of material in 1,000,000,000,000 parts of solids.

2.0 REQUIREMENTS

Condition 7(5) of Certificate of Approval (C. of A.) #3960-7Q4K2G states the following:

> *The Owner shall report the results from the previous calendar year for the mercury monitoring program described [in] Condition 6(8), to the District Manager and the Chief of the Attawapiskat First Nation by June 30 of each year.*

The referenced Condition 6(8) states:

> *The Owner shall carryout a mercury monitoring program that includes, but [is] not necessarily limited to the following:*
>
> *(a) A onetime assessment of peat solids to determine mercury content (completed in 2007);*
>
> *(b) An analysis of peat, mineral soil, and bedrock pore water on an ongoing annual basis at the locations identified in Table 2 below;*
>
> *(c) Monitoring of surface water systems on a monthly or quarterly basis depending on station at the locations identified in Table 3 below;*
>
> *(d) Monitoring of the well field discharge on a monthly basis and quarterly basis and quarterly sampling of individual wells;*
>
> *(e) Sampling of sportfish at 3 year intervals and small fish sampling on an annual basis at locations identified in Table 4 below.*

Condition 7(6) states the following:

The Owner shall report the results from the previous calendar year for the mercury assessments described [in] Condition 6(9), to the District Manager and the Chief of the Attawapiskat First Nation by June 30 of each year.

The referenced Condition 6(9) states:

In conjunction with the mercury management and monitoring program required in Section 6(8), the Owner shall also carryout data analyses, enhanced sampling programs, modeling, risk assessments, and implement effective mitigation measures, as and when required, all in accordance with the March 31, 2008 Report prepared by AMEC and submitted to the District Manager, entitled Trigger Values for Mercury Concentrations and/or Body Burdens in Fish, Condition 6(10) of Certificate of Approval #8700-783LPK, De Beers Canada Inc., Victor Mine. This program may be amended from time to time when approved in writing by the District Manager. As well, water quality data collected as part of the groundwater well field recovery system shall be analyzed statistically to determine the variability and trending over time. Should significant variation occur over time within individual wells or group of wells then a potential concern will be deemed to exist, requiring further investigation.

3.0 REPORTING – CONDITION 6(8) DATA

3.1 Condition 6(8)(a) – One Time Assessment of Peat Solids

Requirements of this condition were fulfilled in Section 3.1 of the first annual mercury report (2008 Annual Report), and are not repeated here.

3.2 Condition 6(8) (b) – Annual Analysis of Peat, Mineral Soil and Bedrock Pore Water

Condition 6(8) of Amended C. of A. #4111-7DXKQW, dated October 3, 2008, and Condition 6(8) of the Amended version referred to as C. of A. #3960-7Q4K2G, dated March 13, 2009, both provide for the annual collection of peat pore water samples from muskeg monitoring program stations identified in Table 2 of the C. of A. The two C. of A.'s also provide for the annual collection of water samples from muskeg monitoring program mineral soil and bedrock monitoring wells / piezometers identified in Table 2 of the C. of A. Samples are to be analyzed for total and methyl mercury.

C. of A. #4111-7DXKQW was preceded by C. of A. #8700-783LPK, dated December 11, 2007. Condition 6(9) of C. of A. 8700-783LPK provided for the development and approval of a mercury monitoring plan. The mercury monitoring plan had been developed previously through consultation with the MOE and was submitted to the MOE on November 13, 2007. The November 13, 2007 monitoring plan provided for the annual collection of peat pore water samples from the same muskeg monitoring program stations identified in Table 2 of C. of A. #3960-7Q4K2G; as well as from mineral soil samples to be collected from three depths below surface from each of the MSV(1)-D, MSV(2)-D and MSV(3)-D stations.

As a precautionary measure to better document baseline conditions, filtered samples for total and methyl mercury analysis were collected from all of the monitoring stations identified in Table 2 of C. of A. #3960-7Q4K2G during 2007. However, due to confusion over the small changes to the sampling program introduced in October 2008 in C. of A. #4111-7DXKQW, from those defined in the earlier November 2007 AMEC submission, the mineral soil pore water samples for the muskeg monitoring program stations were not collected in 2008 prior to freeze-up. Hence, there were no mineral soil or bedrock pore water mercury samples for the late summer / fall of 2008.

Sample collection as per C. of A. #3960-7Q4K2G Table 2 requirements was resumed in August / September of 2009; with the omission of a few samples due to monitoring wells with too little water to sample – particularly in deep clay overburden wells; sample breakage in transit; sampling errors, etc.

Muskeg monitoring program pore water sample results for total and methyl mercury filtered samples are provided in Table 1 for 2007, 2008 and 2009. Station locations are shown in Figure 1. As a general observation, concentrations of total mercury in the 2009 peat horizon water samples were markedly reduced compared with sample results from 2007 and 2008; whereas concentrations of methyl mercury tended to be higher in the 2009 samples compared with results from 2007 and 2008 (Tables 1 and 2). This trend was evident across all stations, irrespective of sample station location, including samples collected from reference site stations located well beyond the 2009 Victor Mine dewatering cone of depression in the upper bedrock aquifer shown in Figure 2 (i.e., Station Clusters S-1, S-7, S-9(1), S-9(2), S-13, S-15 and MS-V3). The general trend to decreasing total mercury values and increasing methyl mercury concentrations observed for 2009, compared with earlier years, therefore appears to be a regional phenomenon that is not linked to mine dewatering effects on muskeg mercury chemodynamics. The reason for the differences in 2009 compared with earlier years may be that 2009 was a wet year compared with 2007 and 2008, which would tend to saturate the peat horizon, thereby diluting total mercury values but potentially increasing mercury methylation rates in the more heavily saturated peat horizons.

3.3 Condition 6(8) (c) – Analysis of Surface Water Systems

Surface water systems considered in this section include the following:

- Passive fen treatment systems;
- Ribbed fen systems;
- Granny Creek; and,
- Nayshkootayaow and Attawapiskat Rivers.

Passive Fen Treatment Systems

The Southwest Fen (SWF) was used as a passive wetland treatment system for the removal of residual total suspended solids and nutrients from the Central Quarry waste water discharge during 2006. The Northeast Fen (NEF) provided a similar function for effluents derived from the following sources:

- Plant site excavation area (completed 2006);
- Crusher excavation area (completed 2006 and 2007);
- Attawapiskat River intake excavation and construction (completed 2007).
- Open Pit mine Phase 1 Mine Water Settling Pond (started 2007 and ongoing); and,
- Fully treated sewage treatment plant effluent (started 2006 and ongoing).

The Southeast Fen (SEF) and the Northwest Control Fen (HgCon) were set up as control fens for the SWF and the NEF. The SEF previously received minor discharges from the shallow south quarry during parts of 2004 and 2005, but was not materially affected by these minor discharges, and is therefore regarded as being not impacted by site activities. The HgCON has never received effluent discharge from any source.

Sampling from the SWF was discontinued in June 2009 as the C. of A. for this fen treatment system (C. of A. 3374-6G7J2Y – dated December 13, 2005) was revoked on March 3, 2009. There are consequently no data for the SWF beyond May 2009.

Total mercury data (unfiltered and filtered) for the passive fen treatment and control system fens are presented in Tables 3 and 4. Methyl mercury data for these same systems are presented in Tables 5 and 6. All results are within applicable federal (and provincial) guidelines for the protection of aquatic life.

Total mercury concentrations were generally comparable between the effluent treatment fen station (NEF), and the two control fen stations (SEF and NWF) for 2009 (Tables 3 and 4). Historically, the higher total mercury concentrations noted in winter for the various stations are believed to be a function of: (1) the difficulty in retrieving free water samples from under thick ice conditions within the fens, and (2) the ion exclusion process associated with ice formation (Tables 3 and 4).

Maximum water depths associated with the ribbed fens are typically in the order of 1 to 1.3 m. As a result, broad areas of these fens freeze to bottom, or near bottom, and it is difficult to retrieve samples of free water from beneath the ice after mid-winter without disturbing bottom sediments. The filtered sample results shown in Table 4 are therefore a more reliable indicator of total mercury concentrations in the water column, compared with total mercury concentrations shown in Table 3.

Also, as the fen water freezes, the ice crystallization process tends to force ions out of the ice matrix, concentrating them in the small amount of free water below the ice. This process applies to all ions, including mercury ions. Freezing effects are evident in the historical data.

Results for methyl mercury in 2009, similar to 2008, show that while still meeting federal and provincial guidelines for the protection of aquatic life, concentrations of methyl mercury were notably higher in the NEF compared with either of the two control fens. Complications described above in relation to under ice sampling also apply to methyl mercury, so better data comparisons are drawn with open water period sampling during July and October. The data for these two months show methyl mercury concentrations for the NEF being approximately double those for the two control fens in 2009 (Table 6). This differential between the NEF and the two control fens was less than that observed for the same period in 2008, by approximately half (Table 6).

Methyl mercury concentrations in the NEF are believed to be elevated as a result of increased sulphate levels, as described in the 2008 Mercury Performance Monitoring report. Sulphate reducing bacteria utilize sulphate as a nutrient, and hence higher sulphate levels tend to promote increased rates of conversion from total mercury to methyl mercury (Ullrich et al. 2001; Jeremiason et al. 2006). Sulphate concentrations in the NEF during 2009 averaged 32.2 mg/L, which is within the optimal range of 20 to 50 mg/L for mercury methylation. Samples from control fen sites typically contain less than 0.01 mg./L of sulphate (Table 8, sites MS9, MS13, MS15). Sulphates are naturally present in deep groundwater in the region and sulphates are believed to have been discharged to the NEF from deep excavations during construction. Potential ongoing sources may include the treated wastewater from the camp sewage plant, or water from the Phase 1 mine water settling pond that collects water from surface run-off and test trenches in the mine pit.

Ribbed Fen Systems

The water quality of general site area drainage is monitored on a quarterly basis at three ribbed fen stations located on or near the Victor Mine site (Stations MS-V1-R, MS-V2-R, and MS-V3-R), as well as at several more remote sites (Figures 1 and 2). Ribbed fen sites were selected for surface water quarterly monitoring because ribbed fens, more than other muskeg types, tend to collect water from surrounding drainages and therefore provide the most representative data on overall site drainage.

Quarterly water sample collection from the suite of ribbed fen sites was initiated in mid-2007, and has been carried out since, except where prevented by frozen ground conditions (Table 7). However, due to confusion at the Mine site over the need to collect both peat pore water and surface water samples from ribbed fens, only peat pore water samples were collected in 2007 and 2008. C. of A. #3960-7Q4K2G provides for collecting peat pore water samples from all muskeg monitoring stations, including ribbed fens, on an annual basis; and collecting surface water samples from ribbed fen stations, only, on a quarterly basis. Sample collection protocols were remedied in 2009 in accordance with C. of A. requirements.

In addition, to assist with data interpretation De Beers collects samples from these same ribbed fen stations for the analysis of chloride, conductivity, nitrate, dissolved organic carbon, pH, sulphate, total phosphorus, calcium, iron, magnesium and sodium (Table 8).

Total and methyl mercury sample results for the ribbed fen stations are shown in Tables 7a and 7b for 2007 through 2009. The data show low concentrations of both total and methyl mercury, with total mercury values for summer and fall months being comparable in all years, and those for methyl mercury being on average slightly higher in 2009, than for 2007 and 2008, although still very low. As described in Section 3.2, the observed increase in methyl mercury concentrations in peat pore waters for 2009 is a regional phenomenon unrelated to mine well field dewatering, and is most likely a function of the generally wet conditions observed during the sampling period in 2009.

Granny Creek System

Upstream and downstream total and methyl mercury concentration data for the Granny Creek system are provided in Tables 9 through 12. Sampling locations are shown in Figure 3. Average total mercury concentrations for the four stations for 2009 varied from 2.01 to 2.42 ng/L for unfiltered samples, and from 1.55 to 1.81 ng/L for filtered samples (Tables 9 and 10). These values are well within the 26 ng/L CEQO value for the protection of aquatic life. Filtered sample results for total mercury, averaged over 2009, are virtually identical for upstream and downstream samples from both creek branches (Table 10). The graphs attached to Tables 9 and 10 also show that while total mercury concentrations can vary substantively throughout the year, due to seasonal and hydrological effects, there are no evident long-term trends in the comparison of stations for either North or South Granny Creeks, for stations upstream or downstream of the developed areas of the mine site.

Methyl mercury concentrations for unfiltered and filtered samples, from upstream and downstream South and North Granny Creek stations, are shown in Tables 11 and 12. The values are again variable, depending on seasonal and hydrologic influences. All values were consistently low, with the exception of late winter unfiltered samples from North Granny Creek (upstream and downstream), and for the July 2008 samples (unfiltered and filtered) from downstream North Granny Creek. In both instances methyl mercury values were comparatively elevated, but still well within the CEQO value of 4 ng/L for methyl mercury. The July 2008 elevated value for methyl mercury for North Granny Creek was considered to be anomalous in the 2008 Annual Report, and further data for 2009 support this interpretation.

There are no evident long-term trends in the filtered methyl mercury data for either creek branch (South or North Granny Creek), which is most evident from a comparison of July values for the period of 2006 through 2009 shown in the figures attached to Tables 11 and 12.

Nayshkootayaow and Attawapiskat Rivers

Total and methyl mercury results for the Nayshkootayaow and Attawapiskat Rivers are shown in Tables 13 and 14. Sample locations are shown in Figure 3. Graphical data are presented in Figure 4. All values are generally low, consistent across the stations, and well within CEQG values. However, as with trends observed in muskeg samples (Table 2), there is a trend to

decreasing total mercury values and increasing methyl mercury values in 2009. These trends are evident for both upstream and downstream stations. The notably elevated filtered methyl mercury values shown for the upstream Attawapiskat River station in July 2009 (0.15 ng/L) and for the A-3 Attawapiskat River station in November 2009 (0.15 ng/L) appear to be anomalous, as the respective unfiltered methyl mercury values for these two samples were 0.04 ng/L and 0.05 ng/L, respectively (Table 14). It is possible that the bottles (or samples) were mislabelled or reversed for these samples. Filtered total and methyl mercury values for the Attawapiskat River, including for the upstream Attawapiskat River station, are greater than corresponding values for the well field discharge. Further discussions are provided in Section 4.3.

3.4 Condition 6(8) (d) – Annual Analysis of Well Field Discharge

Starting in November 2007, in accordance with Condition 6(3) of C. of A. #8700-783LPK, dated December 11, 2007, and Condition 6(3) of Amended C. of A. #4111-7DXKQW, dated October 3, 2008, as well as Condition 6(3) of Amended C. of A. 3960-7Q4K2G, dated March 13, 2009, De Beers initiated monthly monitoring of total and methyl mercury concentrations in the well field discharge. Sampling was initiated proactively in advance of the December 2007 C. of A. issue date. All values for the period of November 2007 to December 2009 have remained low for both total and methyl mercury, as shown in Table 15, with the exception of the December 2009 methyl mercury values which are regarded as anomalous, as the December data are completely out of keeping with the remainder of the data set, and as the filtered methyl mercury value is approximately twice the concentration of the unfiltered value. The December 2009 values are excluded from the graphs shown in Table 15. Total and methyl mercury concentrations in the well field discharge have thus far, on average, been below background concentrations measured in the Attawapiskat River as shown in Table 13 and 14, and there are no evident temporal trends in the data (Table 15).

Quarterly total and methyl mercury sampling results for operating individual wells are shown in Tables 16 and 17, respectively. During the period of November 2007 through April 2008, samples were collected monthly as a precautionary measure before switching to quarterly sampling as required by the C. of A. Only filtered samples were collected from wells during November 2007. The October 2008 total mercury values for VDW-11 are markedly elevated and were likely contaminated with sediments, or the results are anomalous (Table 16). The methyl mercury concentrations for the October 2008 VDW-11 sample were quite low in keeping with other samples, which would also suggest sediment or other contamination for the total mercury sample. The 2009 individual well results for total mercury showed reduced variability compared with data from previous years. Methyl mercury results were consistently low for all wells in 2009, as in previous years.

3.5 Condition 6(8) (e) – Small Fish Mercury Body Burdens

Small-bodied fish species including minnow, stickleback and other species are to be collected annually from area receiving waters (North Granny Creek, South Granny Creek, Tributary 5A, Nayshkootayaow River (upstream of Tributary 3 and downstream of Granny Creek) and the Attawapiskat River (upstream of the mine site, approximately 500 m downstream of the well-

field discharge and approximately 2 km downstream of the well-field discharge). Sampling locations in the Attawapiskat River upstream of the mine site, in the Nayshkootayaow River upstream of Tributary 3, as well as Tributary 5A are expected to serve as reference areas to near-field and far-field areas located downstream of the mine site and discharge locations.

The sample locations for small-bodied fish in 2009 are shown in Figure 5. Small-bodied fish were collected from these locations using the techniques of electroshocking and minnow trapping where applicable. Small-bodied fish were captured at these locations in relatively low abundances despite reasonable effort with both sampling techniques. One sentinel species was not available at each sampling location. However, overlap of species presence was adequate to allow for comparisons between North Granny Creek, South Granny Creek and Tributary 5A. A second species composition was used to compare upstream and downstream Attawapiskat River locations as well as Nayshkootayaow River locations. Pearl Dace (*Margariscus margarita*) was captured at seven of the eight locations sampled and therefore provides some level of comparability across the study area. Total species-specific catch data for each location are summarized in Table 18. A total of 502 fish were captured and submitted for analysis of mercury body burden. The catch of each species was less than 40 per site in all cases, yet was typically great enough to provide statistical comparison.

The catch per unit effort (CPUE) of each species per sample location is summarized in Tables 19 and 20 for electroshocking and minnow trapping respectively. Mercury body burden primary comparisons between sample locations were made using the species as summarized in Table 21. Fish were captured under a Licence to Collect Fish for Scientific Purposes (No. 1052823). At time of capture fish were identified to species and measured for length (fork and total) and wet weight. Fish used for the mercury study were immediately frozen after processing.

Total Mercury Analysis: In the laboratory, individual samples are thawed, homogenized, and sub-sampled. A small mass was retained for oven-drying, and a minimum of two wet samples (<0.5 g wet weight each) were used for analyses. Remaining sample, if any, was kept frozen for replicate analyses if required. Samples were analyzed and reported as wet weight as per standard methods. Analysis was by thermal decomposition and atomic absorption detection using a Milestone DMA-80 as per the requirements of USEPA Method 7473. Calibration and instrument performance were verified through the analysis of various fish tissue standard reference materials.

Granny Creek System

Brook Stickleback (*Culaea inconstans*), Finescale Dace (*Phoxinus neogaeus*) and Pearl Dace mercury body burden levels were compared between North Granny Creek (NGC), South Granny Creek (SGC) and Tributary 5A (ST-5A) for samples collected during August of 2009. (Table 18; Table 21). Tributary 5A is the selected control system for comparisons with the Granny Creek system.

Brook Stickleback

Mean total length (mm), wet weight (g) and total mercury concentration (µg/g) values are summarized for Brook Stickleback in Table 22. Mean length and weight were similar and not significantly different between the three sampling locations (ANOVA, $\alpha = 0.05$) (Table 23). Despite the similarity in size, Brook Stickleback showed a greater mercury body burden concentration at SGC (0.069 µg/g) than at NGC (0.044 µg/g) or ST-5A (0.03 µg/g) (ANOVA, $p < 0.001$) (Table 22; Table 23). Post-hoc comparison indicated that mean body burden values were similar between all location except between SGC and ST-5A. The body burden value for SGC was more than double that of ST-5A (Figure 6). The relationship between total mercury concentration and total length is shown in Figure 7 for each sample location. The relationships were positive for all locations and had relatively similar slopes, yet SGC had a greater intercept value than either NGC or ST-5A indicating a higher level of total mercury for young-of-the year Brook Stickleback. Linear regressions were not significant for total mercury at total length for NGC or SGC yet was relatively highly significant for ST-5A (Table 24). As a result further comparison using ANCOVA was not conducted.

Finescale Dace

Mean total length (mm), wet weight (g) and total mercury concentration (µg/g) values are summarized for Finescale Dace in Table 25. Mean length and weight were not similar between locations with ST-5A having significantly larger individuals represented in the sample. Length and weight were significantly different between the three sampling locations (ANOVA, $\alpha = 0.05$) (Table 26). Despite captures being significantly larger at ST-5A, Finescale Dace still showed a greater mercury body burden concentration at SGC (0.255 µg/g) (ST-5A = 0.071 µg/g). NGC (0.065 µg/g) Finescale Dace had the lowest mean body burden value. Differences in mean body burden values were statistically significant (ANOVA, $p < 0.001$) (Table 25; Table 26). Post-hoc comparison indicated that mean body burden values were similar between NGC and ST-5A yet different between these two sites and SGC. The body burden value for SGC was 3.6 times greater than that of ST-5A (Figure 8). The relationship between total mercury concentration and total length for Finescale Dace is shown in Figure 9 for each sample location. The relationships were positive for all locations and SGC had a greater slope and intercept value than either NGC or ST-5A indicating a higher level of total mercury for Finescale Dace. Linear regressions were not significant for total mercury at total length for NGC yet were significant for SGC and ST-5A (Table 27). However, slopes were not homogeneous; therefore violating the assumptions of ANCOVA and as a result further comparison was not conducted.

Pearl Dace

Mean total length (mm), wet weight (g) and total mercury concentration (µg/g) values are summarized for Pearl Dace in Table 28. Mean length and weight were not similar between locations with SGC and ST-5A having significantly larger individuals represented in the sample than NGC (ANOVA, $\alpha = 0.05$) (Table 29). Despite captures being similar with respect to size between SGC and ST-5A, Pearl Dace still showed a greater mercury body burden concentration

at SGC (0.217 µg/g) (ST-5A = 0.076 µg/g). NGC (0.066 µg/g) Pearl Dace had the lowest mean body burden value. Mean body burden values for Pearl Dace were very similar to that of Finescale Dace as described previously. Differences in Pearl Dace mean body burden values were statistically significant (ANOVA, $p < 0.001$) (Table 28; Table 29). Post-hoc comparison indicated that mean body burden values were similar between NGC and ST-5A (and other larger water course sample locations) yet different between these two locations and SGC. The body burden value for SGC was 2.9 times greater than that of ST-5A (Figure 10). The relationship between total mercury concentration and total length for Pearl Dace is shown in Figure 11 for each sample location. The relationships were positive for all locations and had similar slopes yet the y-intercept value for SGC was greater than either NGC or ST-5A indicating a higher level of total mercury for Pearl Dace. However the similarity in slopes indicates a similar trajectory in assimilation of tissue mercury concentration. Linear regressions were not significant for total mercury at total length for SGC yet were significant for NGC and ST-5A (Table 30). As a result further comparison using ANCOVA was not conducted.

Summary and Discussion

Despite sampled Brook Stickleback being similar in size, Finescale Dace captures being significantly larger at ST-5A and Pearl Dace being relatively larger by weight at ST-5A, mean body burden values for SGC were greater for all three species. For all species the relationship between total mercury concentration and total length has a y-intercept value greater for SGC than for NGC and ST-5A. This may be interpreted as SGC having an overall higher background methyl mercury condition even for young-of-the-year fish. Methyl mercury is the form most easily taken up by fish. The similarity of slope of these relationships for Brook Stickleback and Finescale Dace indicates a lack of change in the uptake of methyl mercury as size (and therefore age) increases.

Extrapolation of body burden levels for a standardized total length for each of the species discussed above is summarized in Table 31. For each of Brook Stickleback, Finescale Dace and Pearl Dace the standardized total lengths for comparison were 40, 55 and 60 mm respectively. Brook Stickleback extrapolated values for North Granny Creek (0.048 µg/g) and South Granny Creek (0.076 µg/g) are greater than Tributary 5A (0.032 µg/g). The extrapolated value for South Granny Creek Finescale Dace (0.26 µg/g) is greater than Tributary 5A (0.06 µg/g). The extrapolated value for Pearl Dace for North Granny Creek (0.079 µg/g) and South Granny Creek (0.170 µg/g) was greater than Tributary 5A (0.065 µg/g) (Table 31).

To further assess the basis for observed differentials in small-bodied fish mercury body burden concentrations between the two systems, AMEC also compared background methyl mercury water quality concentrations in Granny Creek and Tributary 5A. Data for the Granny Creek system were taken from upstream stations dating back to mid-2006 (Stations G1 and G5, Figure 3). These stations are beyond the potential influence of mine site discharges or well field dewatering effects. Results are shown in Table 32. The data for Granny Creek are variable, responding to seasonal and hydrologic influences, but show no long-term trends, indicating that concentrations have not likely been affected by activities at the Victor Mine. In comparing Granny Creek to Tributary 5A, the average methyl mercury concentration for the Granny Creek

system for 2008 was 2.6 times greater than for Tributary 5A for this same period, suggesting that background Granny Creek methyl mercury concentrations are naturally elevated compared with those of Tributary 5A. Methyl mercury differentials between Granny Creek and Tributary 5A samples were less pronounced, being 1.52 times greater for North Granny Creek and 1.72 times greater for South Granny Creek. The differential for 2008 is in the same order as the fish mercury body burden concentrations (i.e. 2.9 to 3.6), but less for 2009.

Data provided by Orihel et al. (2007) suggest a direct linear relationship between mercury concentrations in water and mercury body burden concentrations in small fish. The differences in background methyl mercury concentrations between Granny Creek and Tributary 5A systems would therefore appear to be sufficient in 2008 to account for the observed results, but are less convincing for the 2009 values.

Water methyl mercury concentrations appear to be relatively similar between North Granny Creek and South Granny Creek as summarized in Tables 11 and 12. The greater body burden levels observed for small-bodied fish in South Granny Creek compared to both North Granny Creek and Tributary 5A are therefore difficult to interpret, as the results do not conform with differences in water quality data shown in Tables 11 and 12. Continued monitoring in subsequent years may provide further insight into observed body burden value differentials between the North and South Granny Creek and Tributary 5A.

Nayshkootayaow and Attawapiskat River Systems

Pearl Dace mercury body burden levels were compared between the Nayshkootayaow River upstream of Tributary 3 (NAY-US-T3) and the Nayshkootayaow River downstream of Tributary 6 (Granny Creek) (NAY-DS-T6) (Figure 5). In total 23 Pearl Dace Brook were captured at NAY-US-T3 and 17 at NAY-DS-T6 (Table 18; Table 21). NAY-US-T3 is considered the reference area sample location for this comparison as it is upstream of the mine site influence, while NAY-DS-T6 is downstream of the mine and the Granny Creek system.

Trout-Perch (*Percopsis omiscomaycus)* mercury body burden levels were compared between NAY-DS-T6, the Attawapiskat River approximately 9 km upstream of the mine site (ATT-US-1), the Attawapiskat River 500 m downstream of the well-field discharge (ATT-DS-1), and the Attawapiskat River 2.5 km downstream of the well-field discharge (ATT-DS-2) (Figure 5). The total number of Trout-Perch captured was 117 and catch per sampling location is summarized in Table 18.

Young-of-the year (YOY) Yellow Perch (*Perca flavescens*) mercury body burden levels were compared between ATT-US-1, ATT-DS-1 and ATT-DS-2 (Figure 5; Table 18).

<u>Pearl Dace</u>

Mean total length (mm), wet weight (g) and total mercury concentration (µg/g) values are summarized for Pearl Dace in Table 28. Mean length and weight were similar between

locations NAY-US-T3 and NAY-DS-T6 while values for Attawapiskat River locations were smaller (Table 28; ANOVA, Scheffe Post-hoc, $\alpha = 0.05$). Total mercury body burden was equal between Nayshkootayaow River sampling locations with the NAY-US-T3 and NAY-DS-T6 having a value of 0.042 µg/g (ANOVA, $p < 0.001$). Pearl Dace body burden values were statistically similar for all locations, sampled in 2009 except SGC (Table 29; Figure 10; ANOVA, Scheffe Post-hoc, $\alpha = 0.05$). The relationship between total mercury concentration and total length for Pearl Dace is shown in Figure 11 for each sample location. The relationships were positive for both NAY-US-T3 and NAY-DS-T6 and had similar slope and intercept values indicating similar levels of total mercury and accumulation for Pearl Dace at these locations (Table 29). Linear regression was not significant for total mercury at total length for NAY-DS-T6, but was significant for NAY-US-T3 (Table 30). As a result further comparison using ANCOVA was not conducted.

Trout Perch

Mean total length (mm), wet weight (g) and total mercury concentration (µg/g) values are summarized for Trout-Perch in Table 33. Mean length and weight were not similar between all sample locations (ANOVA, $\alpha = 0.05$) (Table 34). However, size was similar between ATT-US-1 and NAY-DS-T6, with ATT-DS-1 and ATT-DS-2 having smaller individuals. Despite ATT-DS-1 having the smallest mean size, Trout-Perch showed a greater mercury body burden concentration at this site (0.192 µg/g) than at ATT-US-1 (0.058 µg/g), ATT-DS-2 (0.03 µg/g), or NAY-DS-T6 (ANOVA, $p < 0.001$) (Table 33; Table 34). Post-hoc comparison indicated that mean body burden values were similar between all locations except ATT-DS-1, yet NAY-DS-T6 exhibited a mean total mercury value similar to that of ATT-DS-1 (Table 35). Possibly due to the similarity in size of individuals captured at these two locations. The body burden value for ATT-DS-1 was more than three times that of the reference location ATT-US-1 and twice that of ATT-DS-2 (Figure 12). The relationship between total mercury concentration and total length is shown in Figure 13 for each sample location. The relationships were positive for ATT-US-1 and NAY-DS-T6 yet negative for downstream Attawapiskat River sites. Slopes were variable between locations, yet significant for all locations except ATT-DS-1 (35). Both ATT-DS-1 and ATT-DS-2 had intercepts above those for ATT-US-1 and NAY-DS-T6. ATT-US-1 and NAY-DS-T6 had similar intercepts possibly indicating similar YOY body burden levels, yet NAY-DS-T6 had a more positive slope indicating a greater degree of accumulation in larger (and therefore older) Trout-Perch (Figure 13). However, slopes were not homogeneous; therefore violating the assumptions of ANCOVA and as a result further comparison using this analysis was not conducted.

YOY Yellow Perch

Mean total length (mm), wet weight (g) and total mercury concentration (µg/g) values are summarized for YOY Yellow Perch in Table 36. Mean length and weight were similar and not significantly different between the three sampling locations ATT-US-1, ATT-DS-1 and ATT-DS-2 for length, but were significantly different for weight (ANOVA, $\alpha = 0.05$) (Table 37). However, despite size being greater for YOY Yellow Perch at ATT-DS-1, mean mercury body burden

concentration was lowest at this site (0.030 µg/g) compared to ATT-US-1 (0.037 µg/g) or ATT-DS-2 (0.062 µg/g) (ANOVA, $p < 0.001$) (Table 36; Table 37). Post-hoc comparison indicated that mean body burden values were similar between ATT-US-1 and ATT-DS-1, but ATT-DS-2 was dissimilar from both other locations. The body burden value for ATT-DS-2 was approximately double that for fish from the other two sites (Figure 14). The relationship between total mercury concentration and total length is shown in Figure 15 for each sample location. The relationships were positive for all locations except ATT-DS-2 and had variable slopes. Linear regressions were not significant for total mercury at total length for any location for this species (Table 38). As a result further comparison using ANCOVA was not conducted.

Summary and Discussion

Mercury body burden levels in Pearl Dace were equal between both upstream and downstream Nayshkootayaow River locations and in fact body burden levels in Pearl Dace were consistent across all the sample locations except South Granny Creek. YOY Yellow Perch body burdens were equal for the reference and near-field Attawapiskat River sites, yet the far-field location had a mean total mercury value significantly elevated over the other two Attawapiskat River locations possibly indicating a change in the body burden assimilation rates further downstream in the system as other inputs are realized. Water quality monitoring along the Attawapiskat River has not indicated any appreciable change in methyl mercury concentration (Table 14; Figure 4). As such the observed differences in YOY Yellow Perch body burden are not yet fully understood as the length of individuals in the samples were not very different.

Trout-Perch body burden values were relatively similar across all sites that were sampled between the Attawapiskat River and the Nayshkootayaow River except at the near-field Attawapiskat River location approximately 500 m downstream of the well-water discharge point. The mean total mercury concentration in Trout-Perch was significantly greater at this location despite the average size of individuals in the sample being significantly smaller. It is expected that the majority of individuals in the sample from this sample location were YOY and therefore seems to indicate an increase in body burden for this species at this location. This trend is evident at the far-field location as well as fish with total length ranging from 20 to 40 mm (YOY Trout-Perch) showed much more variable total mercury values at length than larger individuals. This was illustrated by the regression plots shown in Figure 13. As previously stated methyl mercury concentrations in water samples were virtually unchanged along the length of the Attawapiskat River (Tables 14) and therefore changes to the body burden levels of YOY Trout-Perch may be as a result of differences in habitat or forage base preferences. Further data collection over subsequent sampling years will help to validate this trend in the future.

Extrapolation of body burden levels for a standardized total length for each of the species discussed above is summarized in Table 31. For each of Pearl Dace, Trout-Perch and Yellow Perch the standardized total lengths for comparison were 60, 35 and 45 mm respectively. Pearl Dace extrapolated values for the Nayshkootayaow River upstream of Tributary 3 (0.043 µg/g) and the Nayshkootayaow River downstream of Tributary 6 (Granny Creek) (0.049 µg/g) were nearly equal. Trout-Perch extrapolated values for the upstream reference location on the Attawapiskat River (0.045 µg/g) was less than for both the near-field (0.079 µg/g) and far-field

(0.114 µg/g) Attawapiskat River sampling locations, yet similar to the Nayshkootayaow River downstream of Granny Creek (0.051 µg/g). The extrapolated value for mercury body burden for YOY yellow perch was similar between the upstream reference and near-field sampling locations on the Attawapiskat River (0.040 µg/g and 0.032 µg/g, respectively)(Table 31). Extrapolated values must be used with some caution as these relationships were not all statistically significant. However, from a biological standpoint, they provide a reference for future monitoring results for qualitative comparison.

3.6 Condition 6(8) (e) – Sport Fish Mercury Body Burdens

There were no sport fish (large fish) sample collections required or planned for 2009. The next collection period for sport fish is scheduled for 2010.

4.0 REPORTING – CONDITION 6(9) DATA

4.1 Annual Analysis of Peat Pore Water

As described in Section 3.2, and as a general observation, concentrations of total mercury in the 2009 peat horizon water samples were markedly reduced compared with sample results from 2007 and 2008; whereas concentrations of methyl mercury tended to be higher in the 2009 samples compared with results from 2007 and 2008 (Tables 1 and 2). This trend was evident across all stations, irrespective of sample station location.

Statistical analyses of total and methyl mercury peat pore water concentrations are presented in Table 39 for the S-1 stations (Table 39a), the S-2 stations (Table 39b), the S-7 stations (Table 39c), the S-8 stations (Table 39d), the S-9(1) stations (Table 39e), the S-9(2) stations (Table 39f), and the S-V stations (Table 39g). As was the case for 2008, none of the 2009 results for total or methyl mercury were significantly different for location effect compared with the S-13 / S-15 background control stations using Two-Way Analysis of Variance at $\alpha = 0.05$. In a virtually all cases methyl mercury concentrations (the parameter of greatest interest) were slightly higher at the S-13 / S-15 control stations, than for stations closer to the Victor Mine site.

General site inspections and flyovers, showed no evidence of any meaningful peatland "drying out", in the area of well field induced depressurization of the underlying upper bedrock aquifer for the 2009 season. Area surface peats remained completely saturated throughout the period, with the possible exception of small zones immediately adjacent to exposed bioherms and near-surface bedrock subcrop areas, where the Natural Sciences and Engineering Research Council (NSERC) research program early results suggest the potential for very localized effects on peat saturation levels.

4.2 Annual Analysis of Mineral Soil Pore Water

Shallow and deep clay pore water samples tended to show reduced total mercury values compared with 2007 results, and only one sample showed any appreciable upward deviation

from the general trend, and that was Station MS-8-CL(6), (or S8-6). This station showed a slightly higher total mercury concentration of 0.6 ng/L, which is still quite low, and lower than the majority values recorded for the shallow clay layer in 2007 (Table 2e). No data were collected in 2008. Observed methyl mercury values in 2009 clay pore water samples were all low, and generally comparable to those observed in 2007, with the exception of elevated values for the S-2 and S- 9(1) samples which showed readings of 0.13 and 0.07 ng/L, respectively. Both stations are beyond the 2 m well field drawdown isopleth in the upper bedrock zone and thus are unlikely to be affected by dewatering in the area of the mine (Figures 1 and 2).

Shallow bedrock water samples showed low total and methyl mercury values which were generally comparable with 2007, with the exception of S-15 station which showed a markedly elevated methyl mercury concentration of 0.37 ng/L. The S-15 station is located about 23 km west southwest of the open pit and well beyond the influence of well field dewatering.

4.3 Annual Analysis of Surface Waters

Statistical analyses of total and methyl mercury concentrations in surface water samples are presented in Table 40. Monthly analyses of North and South Granny Creek total mercury concentrations for upstream and downstream samples show no statistical differences (Table 40a).

Methyl mercury concentrations in upstream, mid-stream and downstream reaches of North and South Granny Creeks were also not statistically significant, due to high data variability and small sample sizes, but the data are suggestive of a possible downstream increase in methyl mercury concentrations for the October 2009 measurements (Table 40b).

Data for the Nayshkootayaow and Attawapiskat Rivers show no upstream or downstream trends, and none of the results are statistically significant for either total or methyl mercury (Tables 40c and 40d).

4.4 Trend Analysis of Well Field Water Discharge

Monthly well field data are presented in Table 15. Concentrations of both total and methyl mercury are, on average, lower than for comparable Attawapiskat River background water concentrations (Tables 13 and 14), and there are no evident trends in the data (Table 15).

4.5 Annual Analysis of Fish Mercury Body Burdens

For discussions regarding comparisons of fish mercury body burdens between geographical locations in 2009 please refer to Section 3.5. Standardized fish comparison were not applicable for comparison between 2008 and 2009 for the majority of species due to inconsistencies in location of collection and differences in length distributions. However, extrapolation of body burden levels for a standardized total length for Pearl Dace was possible for Tributary 5A and the Granny Creek system (North and South Granny Creek pooled) for 2008. The standardized total lengths for comparison for Pearl Dace was 60 mm. The extrapolated body burden values

for Pearl Dace from Tributary 5A and Granny Creek for 2008 were 0.064 µg/g and 0.15 µg/g respectively. Extrapolated values for Tributary 5A were nearly equal between 2008 and 2009 (0.065 µg/g) while the value for Granny Creek in 2008 was similar to that observed for South Creek (0.17 µg/g). Therefore no annual trends were evident for small-bodied fish in the Granny Creek or Tributary 5A systems.

5.0 CONCLUSIONS

Peat Pore Waters

- Total and methyl mercury concentrations in peat pore waters remained considerably lower than the respective CEQG values of 26 ng/L for total mercury and 4 ng/L for methyl mercury. For 2009, concentrations of total mercury were consistently lower than comparable data for 2007 and 2008; whereas concentrations of methyl mercury tended to be higher in peat pore water in 2009 compared with data from 2007 and 2008. These trends were evident throughout the broader area including at stations located several kilometres beyond any possible influence of the Victor Mine.

- Statistical analysis of peat pore waters showed no significant differences, for total or methyl mercury, between peat complexes located near to and at mid-distances from the mine site, compared with more remote control stations.

Surface Waters

- Total mercury concentrations measured in proximal area fen systems (NEF, SEF and HgCon) showed no evident overall trends. Data collection from the SWF was discontinued partway through the year so no conclusions could be drawn regarding this fen.

- Methyl mercury concentrations in the NEF, which receives (or received) effluents from excavations into bedrock, showed elevated methyl mercury concentrations compared with the control fens (SEF and HgCon), but differences in 2009 were less pronounced than those shown for 2008. Elevated methyl mercury concentrations in the NEF are attributed to sulphate-rich effluent waters which stimulate the mercury methylation process, and are not a function of well field dewatering effects.

- Total and methyl mercury concentrations measured in area surface waters (Granny Creek, the Nayshkootayaow River and the Attawapiskat River) show mercury concentrations well below the applicable CEQG values of 26 ng/L and 4 ng/L, respectively, and there are no evident long-term trends in the data.

- Well field total and methyl mercury concentrations are well below CEQG values, and are also generally below Attawapiskat River background values upstream of the mine discharge, and there are no evident long-term trends in the data.

Fish Mercury Body Burdens

- Small-bodied species (Brook Stickleback, Finescale Dace and Pearl Dace) samples collected from South Granny Creek show significant, elevated concentrations of mercury compared to North Granny Creek and the Tributary 5A reference sample location. The difference in body burden mercury concentrations between the Granny Creek system and Tributary 5A is believed to primarily be a function of naturally higher methyl mercury increases in Granny Creek downstream waters as described above. Fish body size differences do not appear to be a contributing factor for the 2009 samples. Differences in body burden mercury concentrations between North Granny Creek and South Granny Creek are not fully understood at this time, and further monitoring in subsequent years may provide some further understanding.

- Similar trajectories of mercury accumulation were evident in Brook Stickleback and Finescale Dace between the Granny Creek system and Tributary 5A and may indicate a lack of long-term effect to body burdens of small-bodied species in the Granny Creek system.

- Small-bodied fish (Pearl Dace) samples collected in the Nayshkootayaow River upstream (reference) and downstream of the mine site showed no statistical difference in body burden mercury concentrations or accumulation trajectories indicating a lack of long-term effects for this species in the mainstem Nayshkootayaow River.

- Pearl Dace body burden mercury concentrations were not significantly different across all sample locations (North Granny Creek, Nayshkootayaow River and Attawapiskat River) except for South Granny Creek, indicating similarity in accumulation between larger and smaller river systems within the study area.

- Small-bodied species (Pearl Dace, Trout-Perch and Yellow Perch) samples collected from the Attawapiskat River showed similar body burden mercury concentrations. Differences were observed for Trout-Perch and Yellow Perch at downstream locations from the mine site, however, increased body burden mercury concentrations were not indicated at both downstream sample locations for either species. Trout-Perch had greater concentrations of mercury at the near-field location, while Yellow Perch had a greater concentration at the far-field location. Greater variability in mercury concentration for young-of-the year Trout-Perch and Yellow Perch was observed at both downstream locations, compared to the upstream stations, but is not fully understood at this time. Subsequent annual monitoring will help to provide an understanding of body burden trends for young-of-the-year for these species.

6.0 RECOMMENDATIONS

The mercury monitoring program is both extensive and robust, and it is recommended that the monitoring program continue to be carried out in its current form, Review comments from the MOE on the first annual mercury report have been taken into account in the preparation of this report.

7.0 REFERENCES

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TABLE 1
MUSKEG MONITORING PROGRAM - ANNUAL MERCURY RESULTS - 2007-2009
(late summer / fall sampling - Data in ng/L or parts per trillion)

Cluster Location	Substrate/Condition	Well Name	GPS Code	Sample Code	Total Mercury (Filtered)			Methyl Mercury (Filtered)		
					2007	2008	2009	2007	2008	2009
S-1	Bedrock (Bioherm)	MS-1-BR	ES1-BR	ES1BDR	1.30	ns	0.27	0.01	ns	0.03
	Clay - Deep	MS-1-CL(1)	ES1-BR	ES1CLD	1.47	ns	0.18	ns	ns	0.03
	Clay - Shallow	MS-1-CL(2)	ES1-BR	ES1CLS	0.27	ns	0.16	0.01	ns	0.03
	Peat - Domed Bog	MS-1-D	ES1D	ES1D	2.22	1.93	0.4	0.02	0.07	0.10
	Peat - Flat Bog	MS-1-F	ES1F	ES1F	2.73	3.04	0.83	0.01	0.18	0.19
	Peat - Horizontal Fen	MS-1-H	ES1H	ES1H	na	1.77	0.36	na		0.10
	Peat - Ribbed Fen	MS-1-R	ES1R	ES1R	1.81	2.27	0.49	0.02	0.07	0.06
S-2	Bedrock (Bioherm)	MS-2-BR	ES2-BR	ES2BDR	0.28	ns	0.24	0.00	ns	0.02
		MS-2BR	ES2-BR	ES2BR	0.68	ns	ns	0.00	ns	ns
	Clay - Deep	MS-2-CL(1)	ES2-BR	ES2CLD	ns	ns	0.36	ns	ns	0.13
	Clay - Shallow	MS-2-CL(2)	ES2-BR	ES2CLS	0.98	ns	0.17	0.00	ns	0.04
	Peat - Domed Bog	MS-2-D	ES2D	ES2D	1.98	2.15	0.51	0.00	0.02	0.04
	Peat - Flat Bog	MS-2-F	ES2F	ES2F	3.12	3.05	2.35	0.00		0.07
	Peat - Ribbed Fen	MS-2-R	ES2R	ES2R	1.56	2.02	0.38	0.00	0.04	0.09
S-7	Bedrock (Bioherm)	MS-7-BR	NS7-CL	NS7-BDR	0.74	ns	0.06	0.00	ns	0.02
		MS-7BR	NS7-CL	NS7-BR	0.43	ns	0.08	0.00	ns	0.02
			NS7-CL	NS7-CLD	0.49	ns	0.11	0.00	ns	0.02
	Clay - Deep	MS-7-CL(1)	NS7-CL	NS7-CLD	0.59	ns	0.25	0.00	ns	0.02
	Clay - Intermediate		NS7-CL	NS7-CLI	0.41	ns	0.13	0.02	ns	0.02
	Clay - Shallow	MS-7-CL(2)	NS7-CL	NS7-CLS	0.70	ns	0.10	0.01	ns	0.017
	Peat - Domed Bog	MS-7-D	NS-7D	NS-7D	0.72	1.04	0.29	0.01	0.01	0.04
	Peat - Flat Bog	MS-7-F	NS-7F	NS-7F	1.23	1.61	0.27	0.01	0.00	0.05
	Peat - Horizontal Fen	MS-7-H	NS-7H	NS-7H	1.24	2.18	0.68	0.02	0.06	0.10
	Peat - Ribbed Fen	MS-7-R	NS-7R	NS-7R	0.62	0.52	0.12	0.01	0.01	0.03
S-8	Bedrock (Bioherm)	MS-8-BR	NS8CL1	NS8C1DR	0.74	ns	0.06	0.00	ns	0.02
		MS-8BR	NS8CL1	NS8C1R	0.43	ns	0.08	0.00	ns	0.02
			NS8CL1	NS8C1D	0.49	ns	0.11	0.00	ns	0.02
	Clay - Deep	MS-8-CL(1)	NS8CL1	NS8C1D	0.31	ns	0.24	0.01	ns	0.017
	Clay - Middle	MS-8-CL(2)	NS8CL1	NS8C1I	ns	ns	0.26	ns	ns	0.04
	Clay - Shallow	MS-8-CL(3)	NS8CL1	NS8C1S	0.89	ns	0.28	0.03	ns	0.02
	Clay - Deep	MS-8-CL(4)	NS8CL2	NS8C2D	0.14	ns	0.16	0.01	ns	0.02
	Clay - Middle	MS-8-CL(5)	NS8CL2	NS8C2I	0.49	ns	ns	0.00	ns	ns
	Clay - Shallow	MS-8-CL(6)	NS8CL2	NS8C2S	0.33	ns	0.59	0.08	ns	0.017
	Peat - Domed Bog	MS-8-D	NS8-1D	NS8-1D	1.13	1.49	0.38	0.00	0.01	0.06
	Peat - Flat Bog	MS-8-F	NS8-1F	NS8-1F	1.91	2.85	1.46	0.00	0.08	0.31
	Peat - Horizontal Fen	MS-8-H	NS8-1H	NS8-1H	0.56	0.55	0.18	0.01	0.01	0.07
	Peat - Ribbed Fen	MS-8-R	NS8-1R	NS8-1R	1.00	0.98	0.27	0.00	0.01	0.09
S-9(1)	Bedrock (Bioherm)	MS-9(1)-BR	SS9CL1	SS9C1DR	0.28	ns	0.24	0.00	ns	0.02
		MS-9BR	SS9CL1	SS9C1R	0.68	ns	ns	0.00	ns	ns
	Clay - Deep	MS-9(1)-CL(1)	SS9CL1	SS9C1D	0.66	ns	0.005	0.01	ns	0.005
	Clay - Shallow	MS-9(1)-CL(2)	SS9CL1	SS9C1S	1.03	ns	0.10	0.01	ns	0.07
	Peat - Domed Bog	MS-9(1)-D	SS9-1D	SS9-1D	0.77	0.77	0.27	0.01	0.00	0.17
	Peat - Flat Bog	MS-9(1)-F	SS9-1F	SS9-1F	2.53	1.74	0.37	0.01	0.04	0.05
	Peat - Horizontal Fen	MS-9(1)-H	SS9-1H	SS9-1H	2.65	2.06	0.45	0.02	0.05	0.11
	Peat - Ribbed Fen	MS-9(1)-R	SS9-1R	SS9-1R	0.72	1.26	0.22	0.02	0.03	0.04
S-9(2)	Bedrock (Bioherm)	MS-9(2)-BR	SS9CL2	SS9C2DR	0.28	ns	0.24	0.00	ns	0.02
		MS-9BR	SS9CL2	SS9C2R	0.68	ns	ns	0.00	ns	ns
	Clay - Deep	MS-9(2)-CL(1)	SS9CL2	SS9C2D	1.09	ns	0.30	0.01	ns	0.04
	Clay - Shallow	MS-9(2)-CL(2)	SS9CL2	SS9C2S	0.44	ns	0.13	0.00	ns	0.02
	Peat - Domed Bog	MS-9(2)-D	SS9-2D	SS9-2D	1.72	1.89	0.42	0.01	0.02	0.02
	Peat - Flat Bog	MS-9(2)-F	SS9-2F	SS9-2F	1.10	1.27	0.57	0.00	0.06	0.12
	Peat - Horizontal Fen	MS-9(2)-H	SS9-2H	SS9-2H	0.80	0.59	0.30	0.00	0.01	0.08
	Peat - Ribbed Fen	MS-9(2)-R	SS9-2R	SS9-2R	1.29	0.90	0.33	0.00	0.06	0.17
S-13	Bedrock (Bioherm)	MS-13-BR	WS13CL	WS13CDR	2.57	ns	0.72	0.00	ns	0.02
			WS13CL	WS13CD	1.19	ns	ns	0.00	ns	ns
	Clay - Deep	MS-13-CL(1)	WS13CL	WS13CD	0.42	ns	0.09	0.03	ns	0.02
			WS13CL	WS13CI	1.48	ns	0.18	0.04	ns	0.04
	Clay - Shallow	MS-13-CL(2)	WS13CL	WS13CS	0.50	ns	0.005	0.02	ns	Missing
	Peat - Domed Bog	MS-13-D	WS13-D	WS13-D	2.81	2.68	1.26	0.03	0.12	0.24
	Peat - Flat Bog	MS-13-F	WS13-F	WS13-F	1.60	2.79	0.92	0.07	0.24	0.45
	Peat - Horizontal Fen	MS-13-H	WS13-H	WS13-H	ns	0.57	0.35	0.02	0.01	0.29
	Peat - Ribbed Fen	MS-13-R	WS13-R	WS13-R	0.40	0.95	0.25	0.13	0.00	0.05
S-15	Bedrock (Bioherm)	MS-15-BR	WS15CL	WS15CDR	2.00	ns	2.34	0.01	ns	0.02
			WS15CL	WS15CD	0.56	ns	ns	0.01	ns	ns
	Clay - Deep	MS-15-CL(1)	WS15CL	WS15CD	is	ns	ns	0.01	ns	ns
			WS15CL	WS15CI	1.70	ns	ns	0.00	ns	ns
	Clay - Shallow	MS-15-CL(2)	WS15CL	WS15CS	0.69	ns	0.07	0.01	ns	0.005
	Peat - Domed Bog	MS-15-D	WS15-D	WS15-D	1.35	1.89	0.93	0.01	0.04	0.78
	Peat - Flat Bog	MS-15-F	WS15-F	WS15-F	2.66	2.55	0.30	0.00	0.07	0.17
	Peat - Horizontal Fen	MS-15-H	WS15-H	WS15-H	0.99	0.90	0.22	ns	0.01	0.10
	Peat - Ribbed Fen	MS-15-R	WS15-R	WS15-R	0.43	0.92	0.15	0.02	0.02	0.00
S-V1	Peat - Domed Bog	MS-V(1)-D	-	NS-V-1D	1.96	0.60	0.18	ns	0.01	0.02
	Peat - Ribbed Fen	MS-V(1)-R	-	NS-V-1R	see MS-2-R	see MS-2-R	see MS-2-R	see MS-2-R	see MS-2-R	see MS-2-R
S-V2	Peat - Domed Bog	MS-V(2)-D	-	SS-V-2D	1.97	1.16	0.24	ns	0.01	0.02
	Peat - Ribbed Fen	MS-V(2)-R	-	SS-V(2)-R	0.59	0.60	0.13	ns	0.00	0.03
S-V3	Peat - Domed Bog	MS-V(3)-D	-	SS-V-3D	0.72	0.61	0.49	ns	0.10	0.03
	Peat - Ribbed Fen	MS-V(3)-R	-	SS-V(3)-R	1.08	1.69	0.47	ns	0.02	0.04

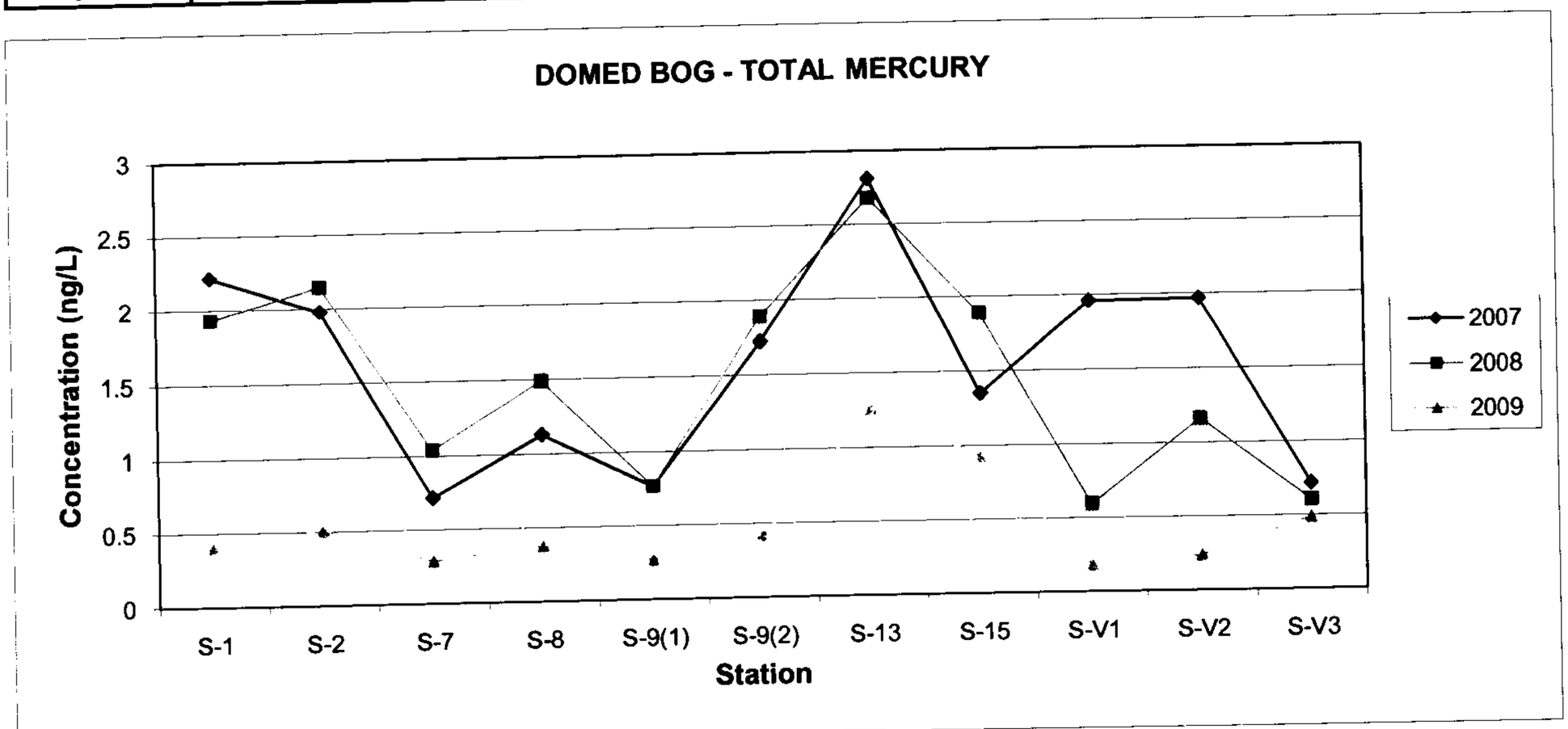
Notes
na - not accessible
is - insufficient sample
ns - no sample

non-detectable = <0.005 ng/L
detected = <0.017 ng/L

Near-field sites: S-2; S-8; S-V1; S-V2; S-V3
Mid-field sites: S-1; S-7; S-9(1); S-9(2)
Far-field sites: S-13; S-15

TABLE 2a
MUSKEG PORE WATER - DOMED BOG 2007-2009 (Filtered)

Cluster Location	Total Mercury			Methyl Mercury		
	2007	2008	2009	2007	2008	2009
S-1	2.22	1.93	0.4	0.02	0.07	0.10
S-2	1.98	2.15	0.51	0.00	0.02	0.04
S-7	0.72	1.04	0.29	0.01	0.01	0.04
S-8	1.13	1.49	0.38	0.00	0.01	0.06
S-9(1)	0.77	0.77	0.27	0.01	0.00	0.17
S-9(2)	1.72	1.89	0.42	0.01	0.02	0.02
S-13	2.81	2.68	1.26	0.03	0.12	0.24
S-15	1.35	1.89	0.93	0.01	0.04	0.78
S-V1	1.96	0.60	0.18	-	0.01	0.02
S-V2	1.97	1.16	0.24	-	0.01	0.02
S-V3	0.72	0.61	0.49	-	0.10	0.03



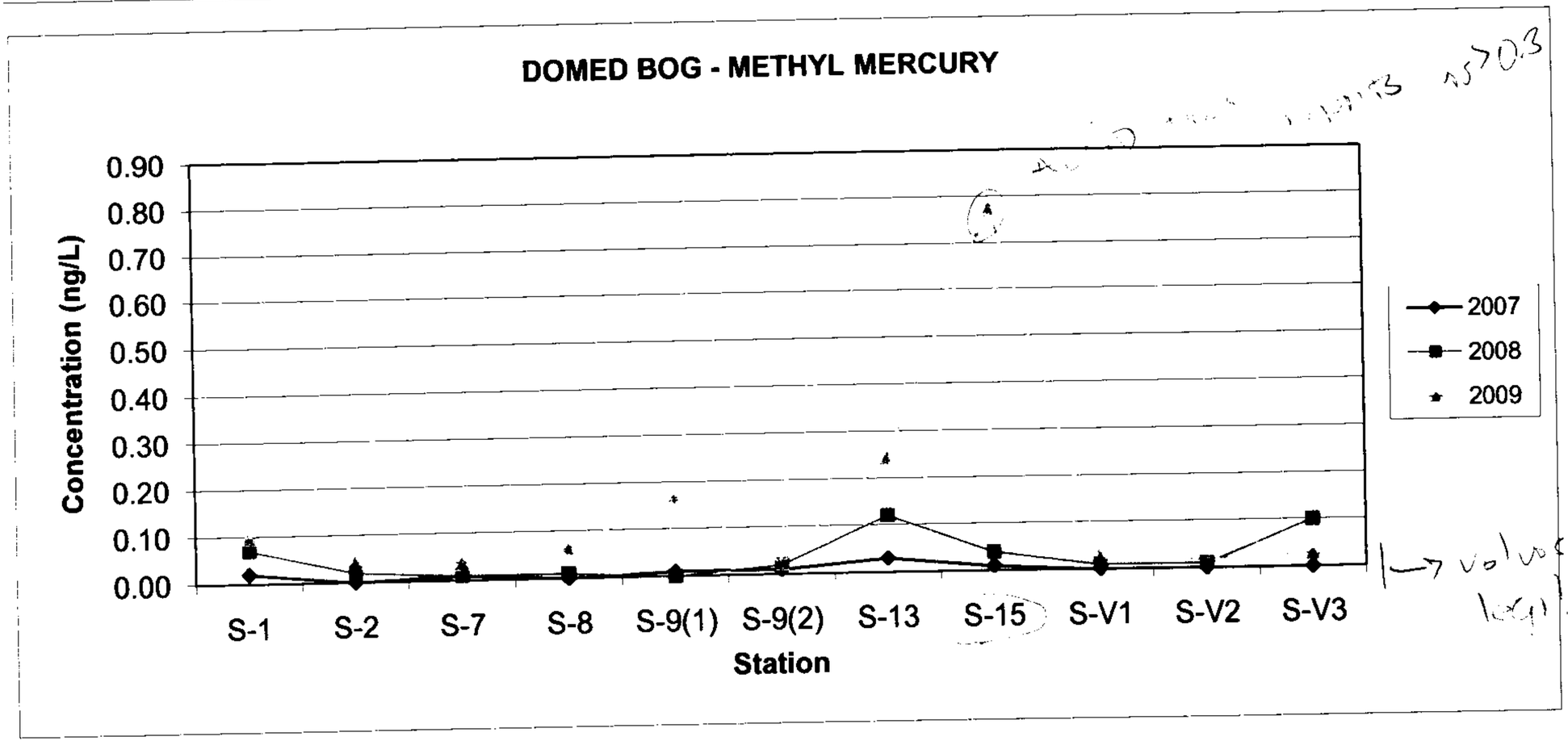
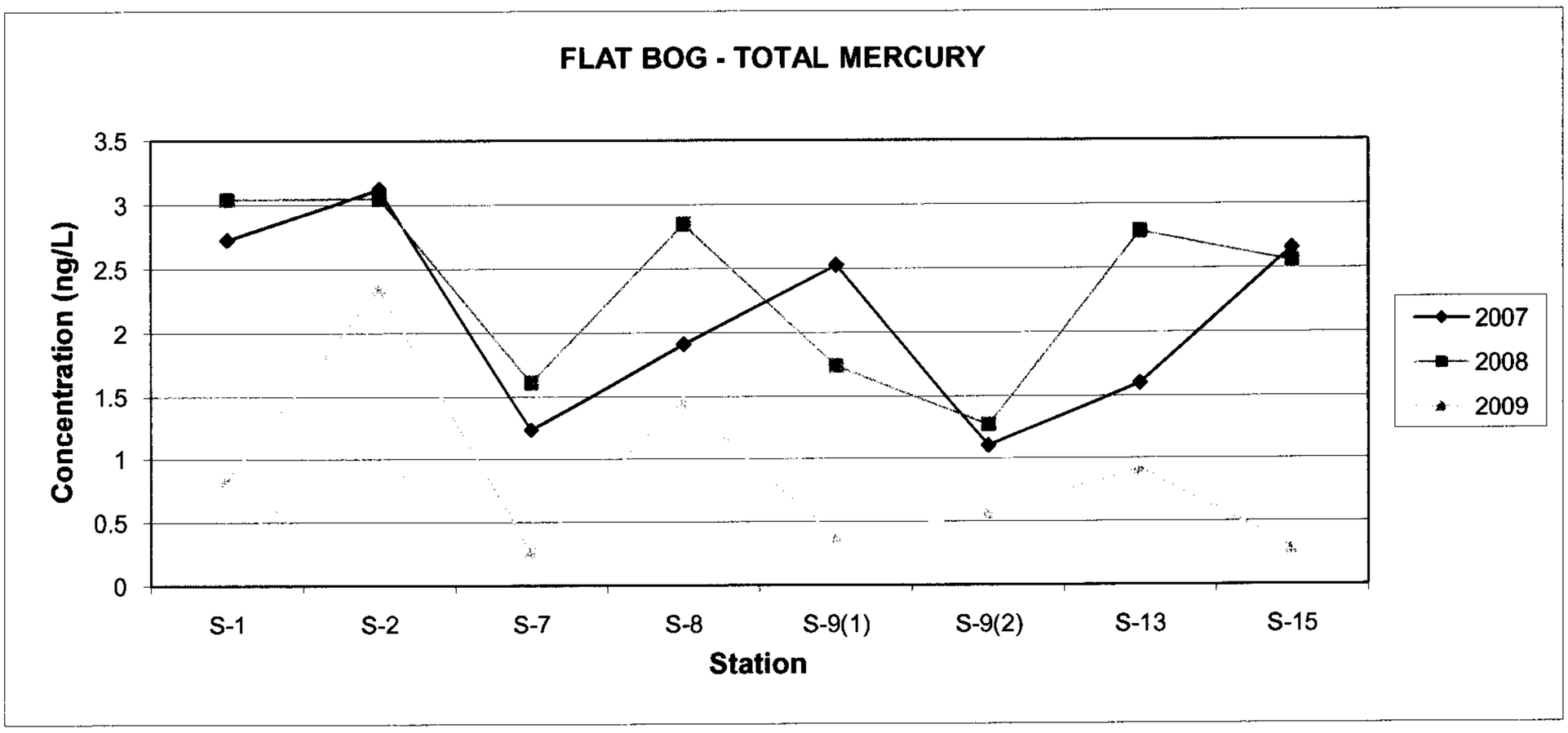


TABLE 2b
MUSKEG PORE WATER - FLAT BOG 2007-2009 (Filtered)

Cluster Location	Total Mercury			Methyl Mercury		
	2007	2008	2009	2007	2008	2009
S-1	2.73	3.04	0.83	0.01	0.18	0.19
S-2	3.12	3.05	2.35	0.00	-	0.07
S-7	1.23	1.61	0.27	0.01	0.00	0.05
S-8	1.91	2.85	1.46	0.00	0.08	0.31
S-9(1)	2.53	1.74	0.37	0.01	0.04	0.05
S-9(2)	1.10	1.27	0.57	0.00	0.06	0.12
S-13	1.60	2.79	0.92	0.07	0.24	0.45
S-15	2.66	2.56	0.30	0.00	0.07	0.17



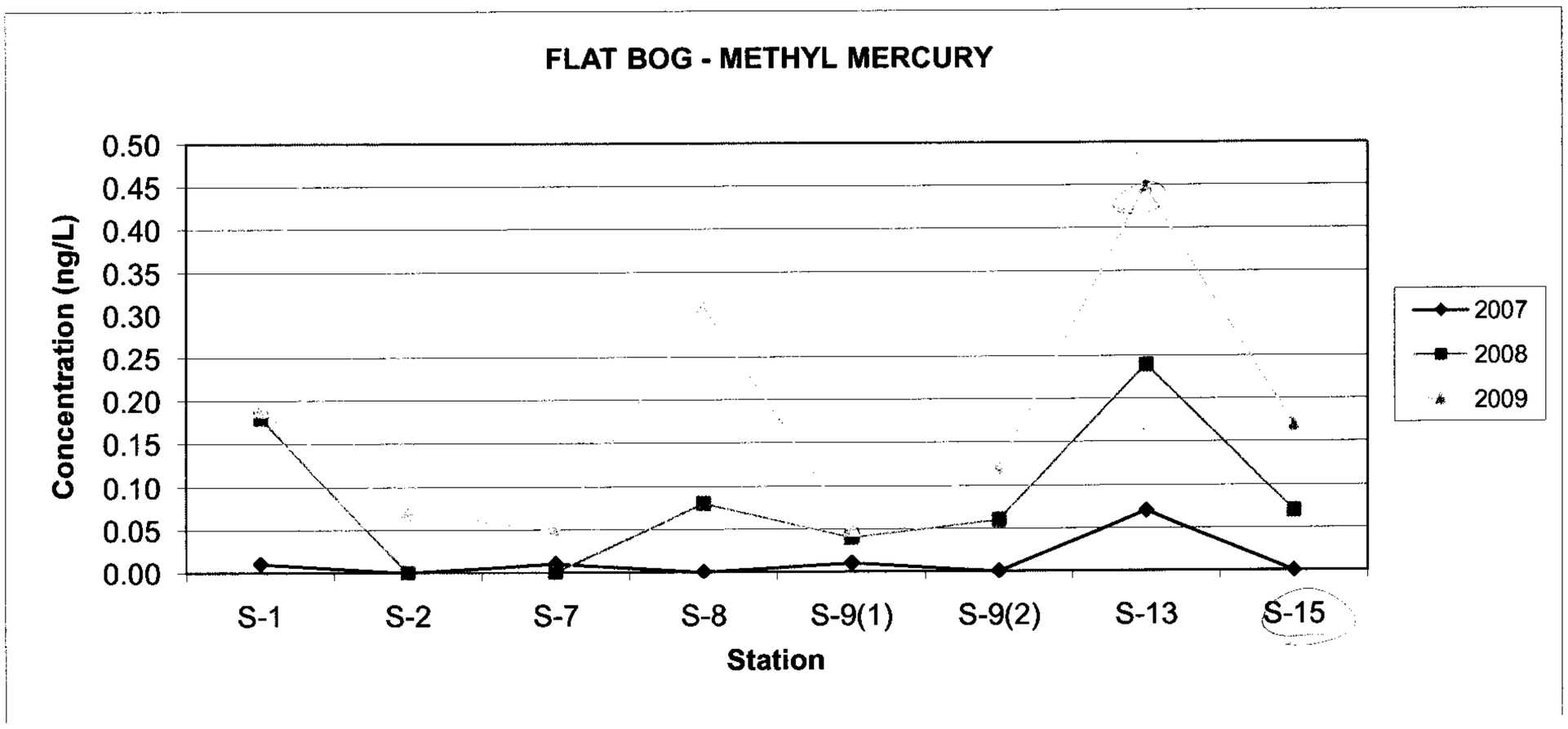
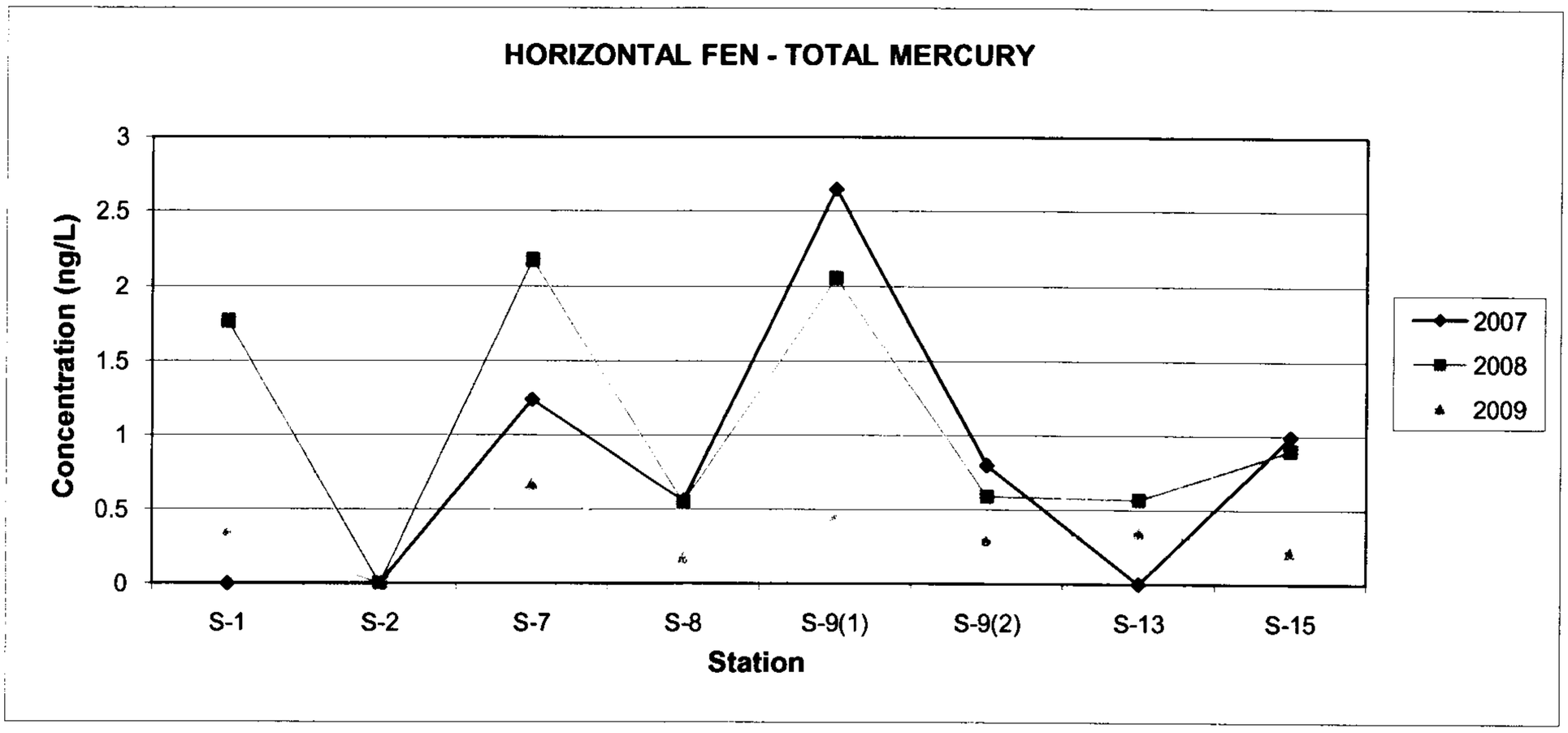


TABLE 2c
MUSKEG PORE WATER - HORIZONTAL FEN 2007-2009 (Filtered)

Cluster Location	Total Mercury			Methyl Mercury		
	2007	2008	2009	2007	2008	2009
S-1	-	1.77	0.36	-	-	0.10
S-2	-	-	-	-	-	-
S-7	1.24	2.18	0.68	0.02	0.06	0.10
S-8	0.56	0.55	0.18	0.01	0.01	0.07
S-9(1)	2.65	2.06	0.45	0.02	0.05	0.11
S-9(2)	0.80	0.59	0.30	0.00	0.01	0.08
S-13	-	0.57	0.35	0.02	0.01	0.29
S-15	0.99	0.90	0.22	-	0.01	0.10



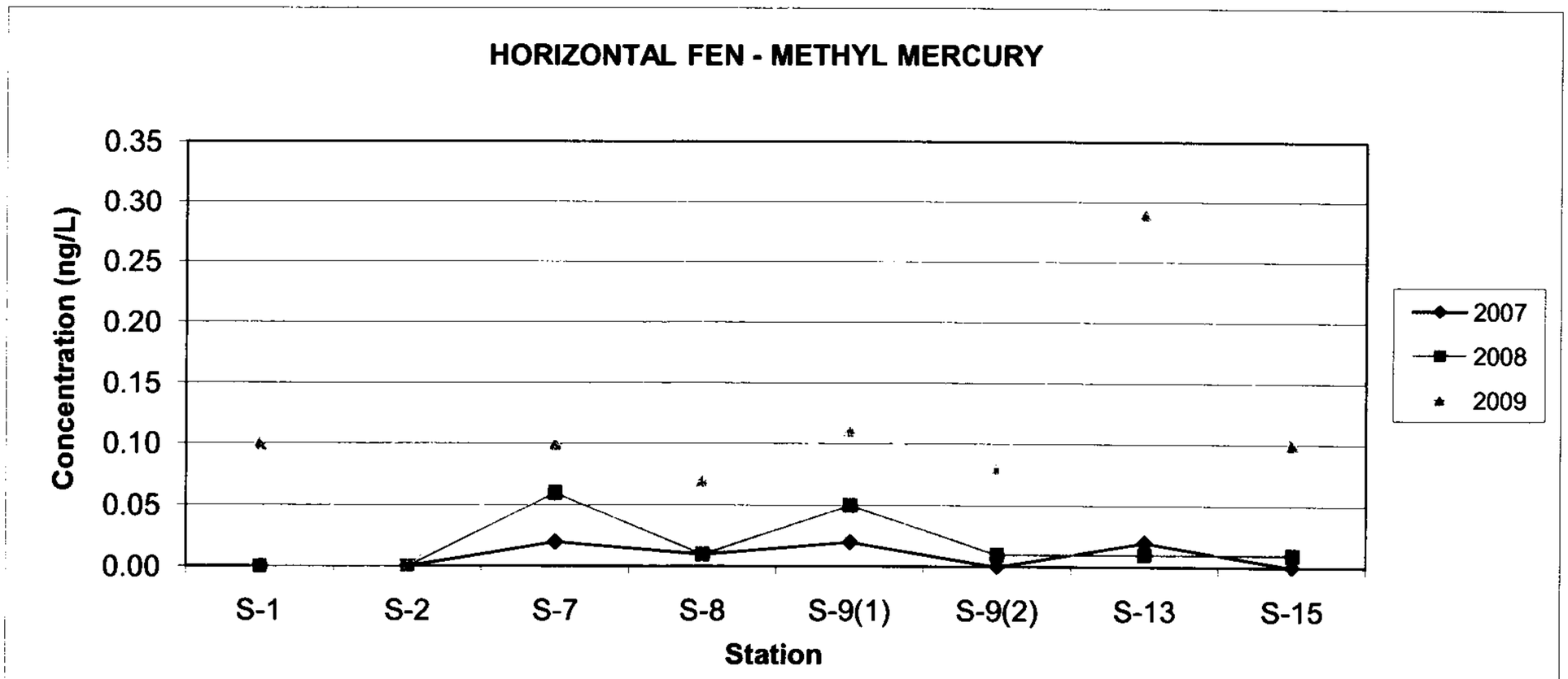
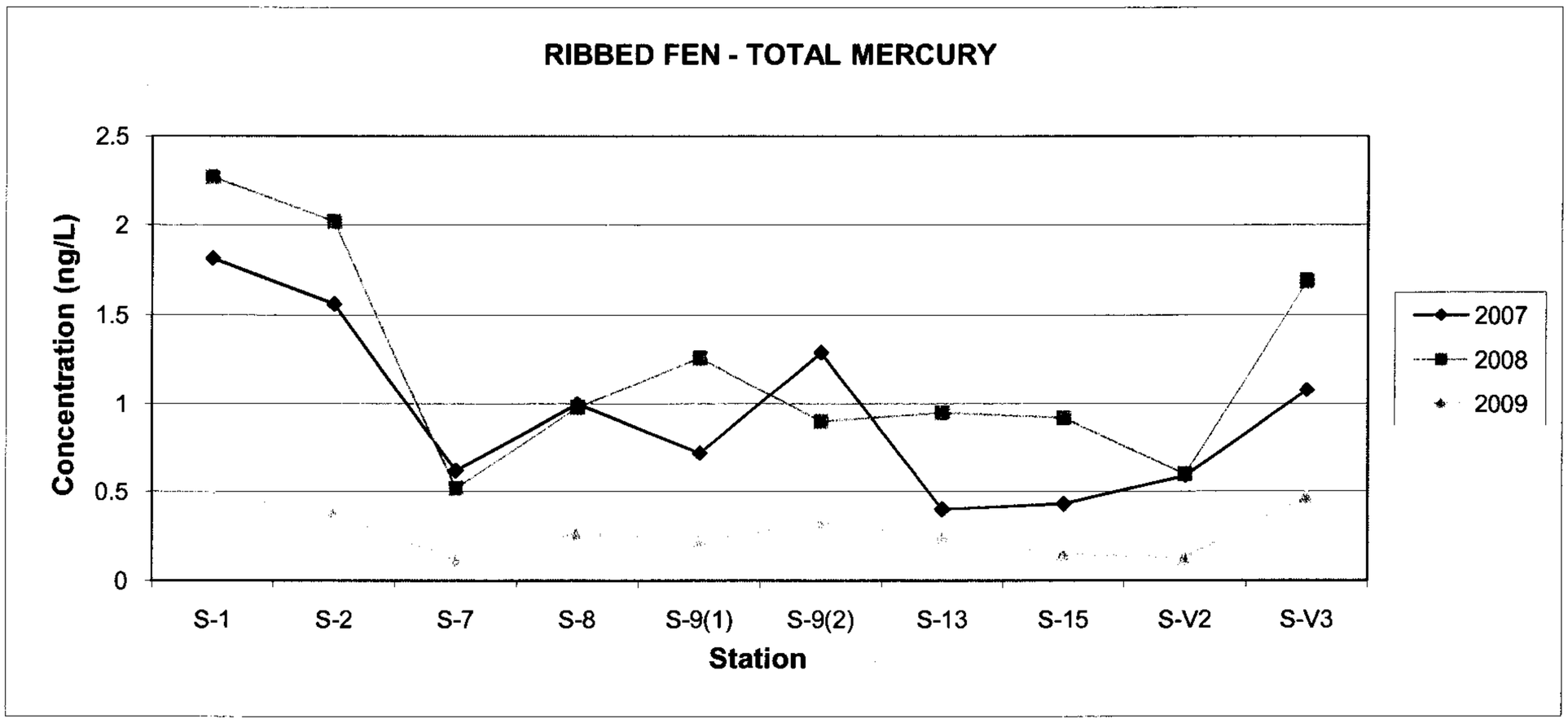


TABLE 2d
MUSKEG PORE WATER - RIBBED FEN 2007-2009 (Filtered)

Cluster Location	Total Mercury			Methyl Mercury		
	2007	2008	2009	2007	2008	2009
S-1	1.81	2.27	0.49	0.02	0.07	0.06
S-2	1.56	2.02	0.38	0.00	0.04	0.09
S-7	0.62	0.52	0.12	0.01	0.01	0.03
S-8	1.00	0.98	0.27	0.00	0.01	0.09
S-9(1)	0.72	1.26	0.22	0.02	0.03	0.04
S-9(2)	1.29	0.90	0.33	0.00	0.06	0.17
S-13	0.40	0.95	0.25	0.13	0.00	0.05
S-15	0.43	0.92	0.15	0.02	0.02	0.00
S-V2	0.59	0.6	0.13	-	0.00	0.03
S-V3	1.08	1.69	0.47	-	0.02	0.04



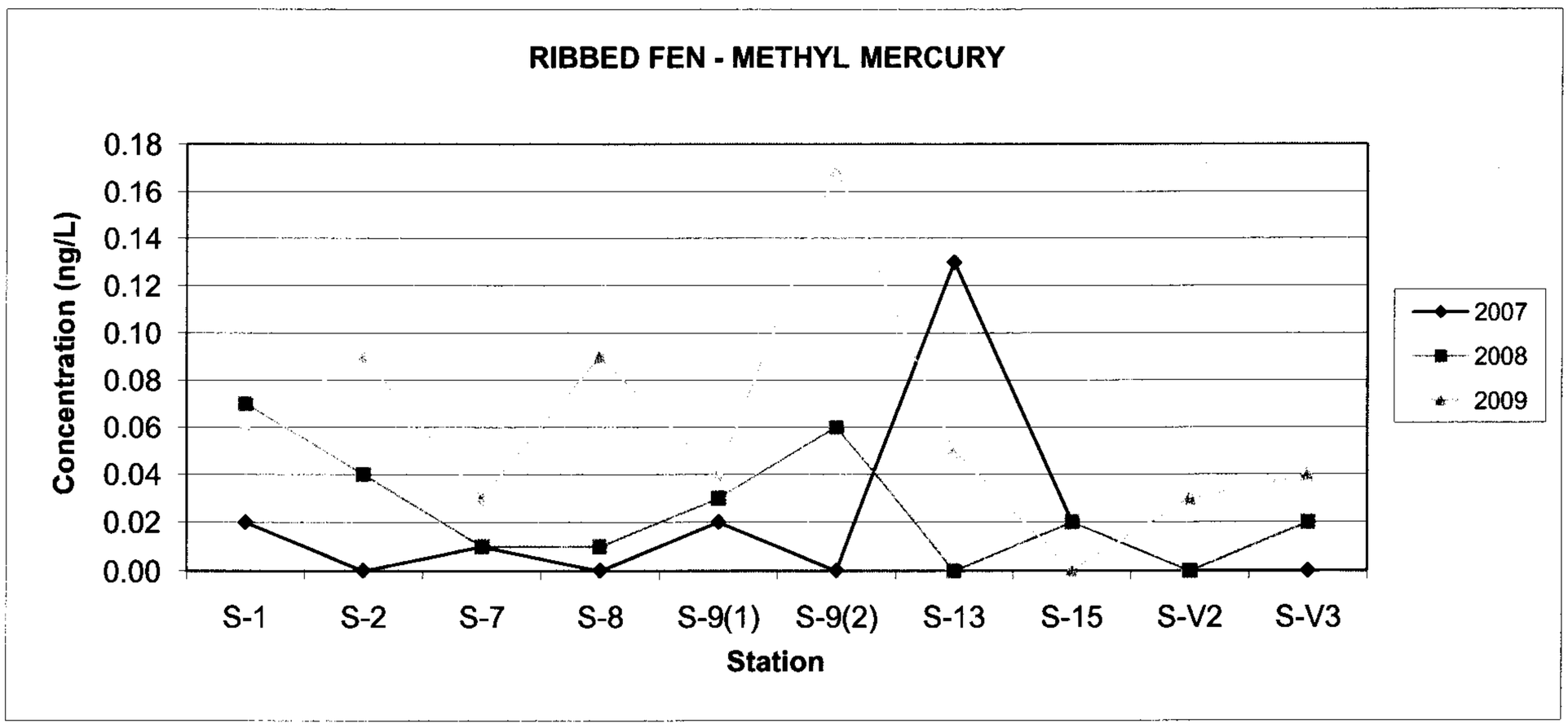
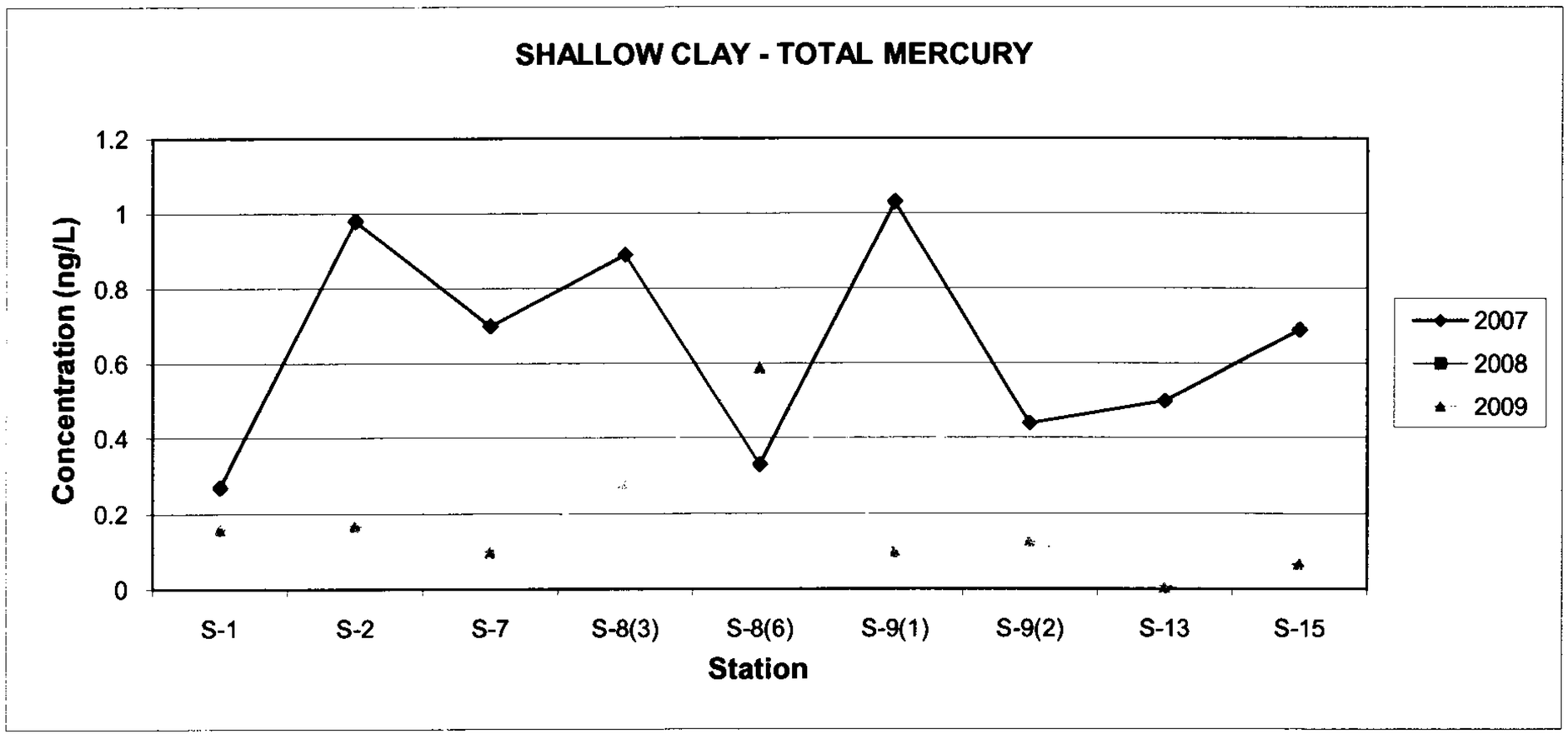


TABLE 2e
MINERAL HORIZON PORE WATER - SHALLOW CLAY 2007-2009 (Filtered)

Cluster Location	Total Mercury			Methyl Mercury		
	2007	2008	2009	2007	2008	2009
S-1	0.27		0.16	0.01		0.03
S-2	0.98		0.17	0.00		0.04
S-7	0.7		0.10	0.01		0.017
S-8(3)	0.89		0.28	0.03		0.02
S-8(6)	0.33		0.59	0.08		0.017
S-9(1)	1.03		0.1	0.01		0.07
S-9(2)	0.44		0.13	0.00		0.02
S-13	0.50		0.005	0.02		
S-15	0.69		0.07	0.01		0.005



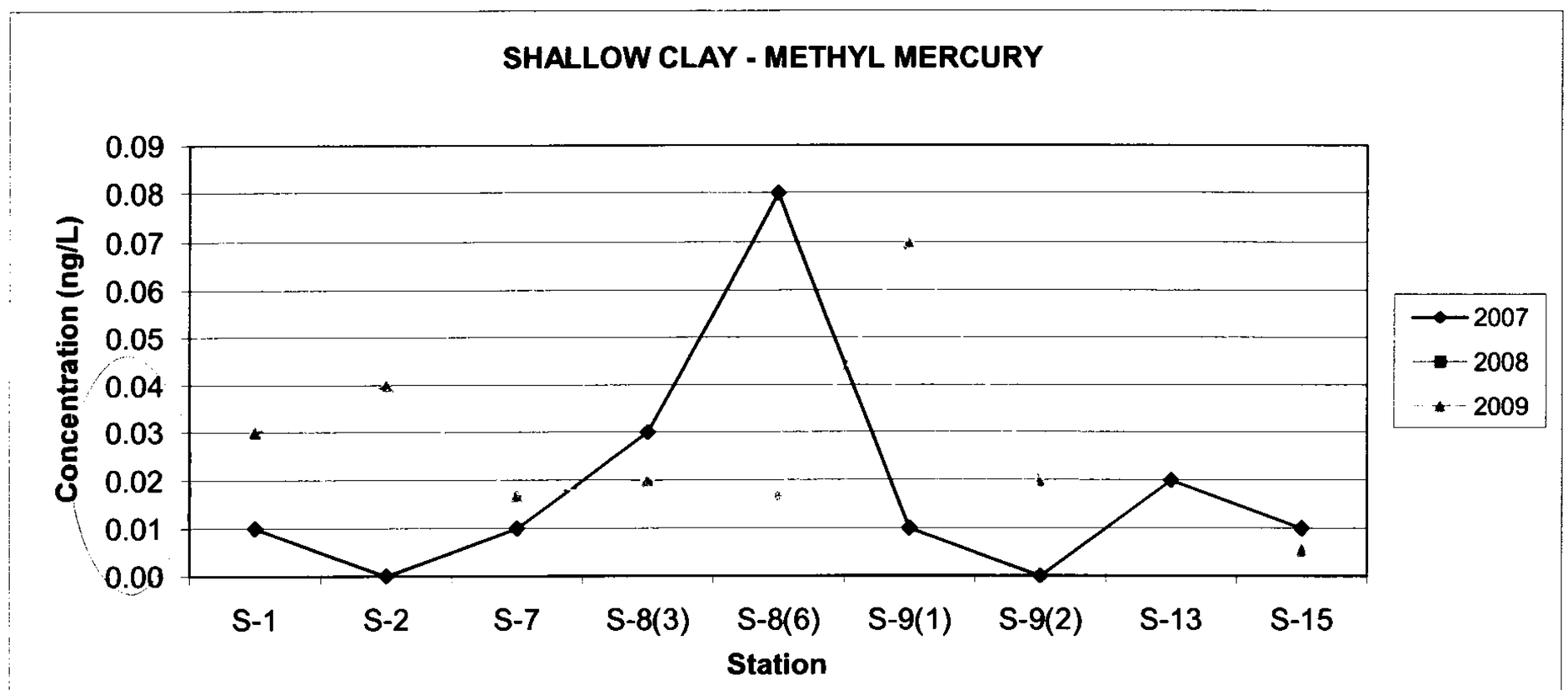
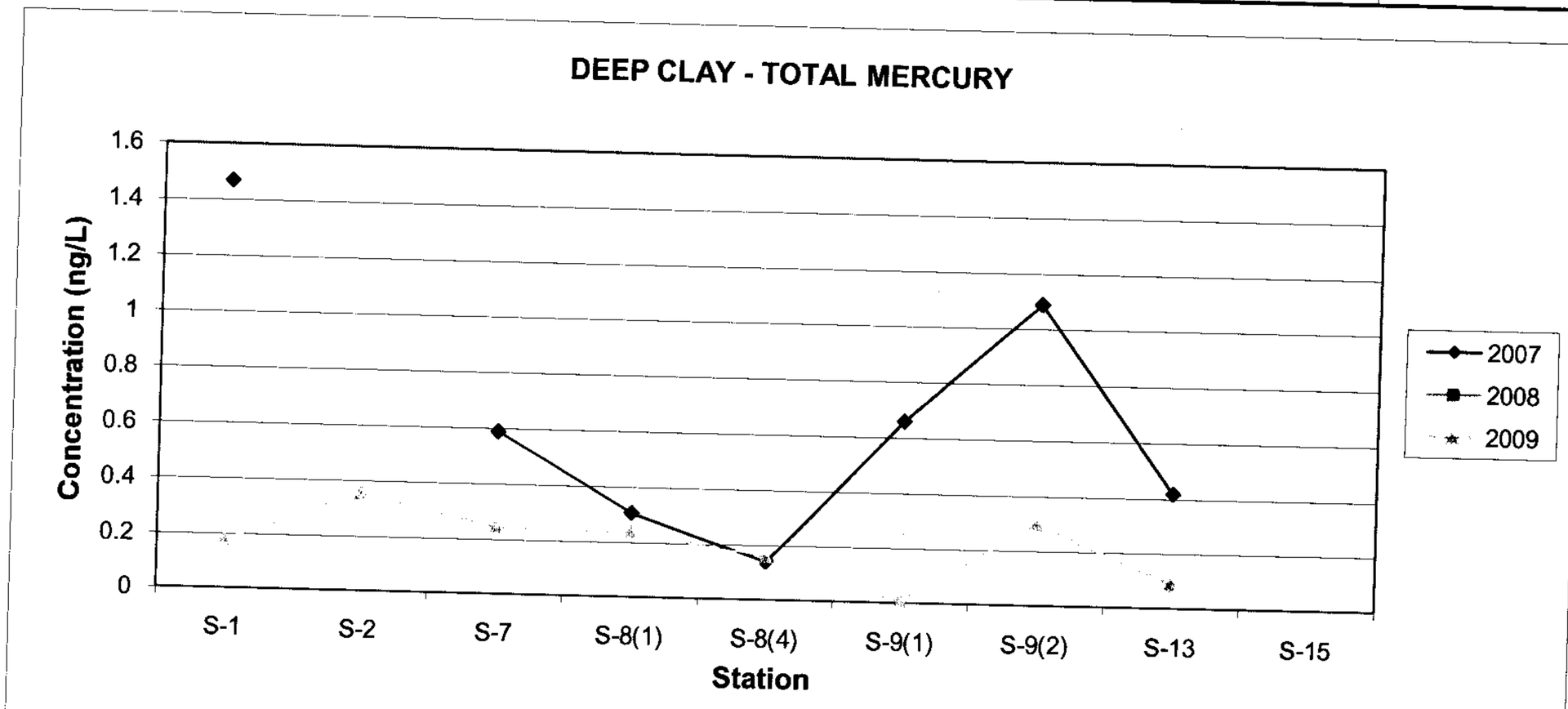


TABLE 2f
MINERAL HORIZON PORE WATER - DEEP CLAY 2007-2009 (Filtered)

Cluster Location	Total Mercury			Methyl Mercury		
	2007	2008	2009	2007	2008	2009
S-1	1.47		0.18			0.03
S-2			0.36			0.13
S-7	0.59		0.25	0.00		0.02
S-8(1)	0.31		0.24	0.01		0.017
S-8(4)	0.14		0.16	0.01		0.02
S-9(1)	0.66		0.005	0.01		0.005
S-9(2)	1.09		0.30	0.01		0.04
S-13	0.42		0.09	0.03		0.02
S-15				0.01		



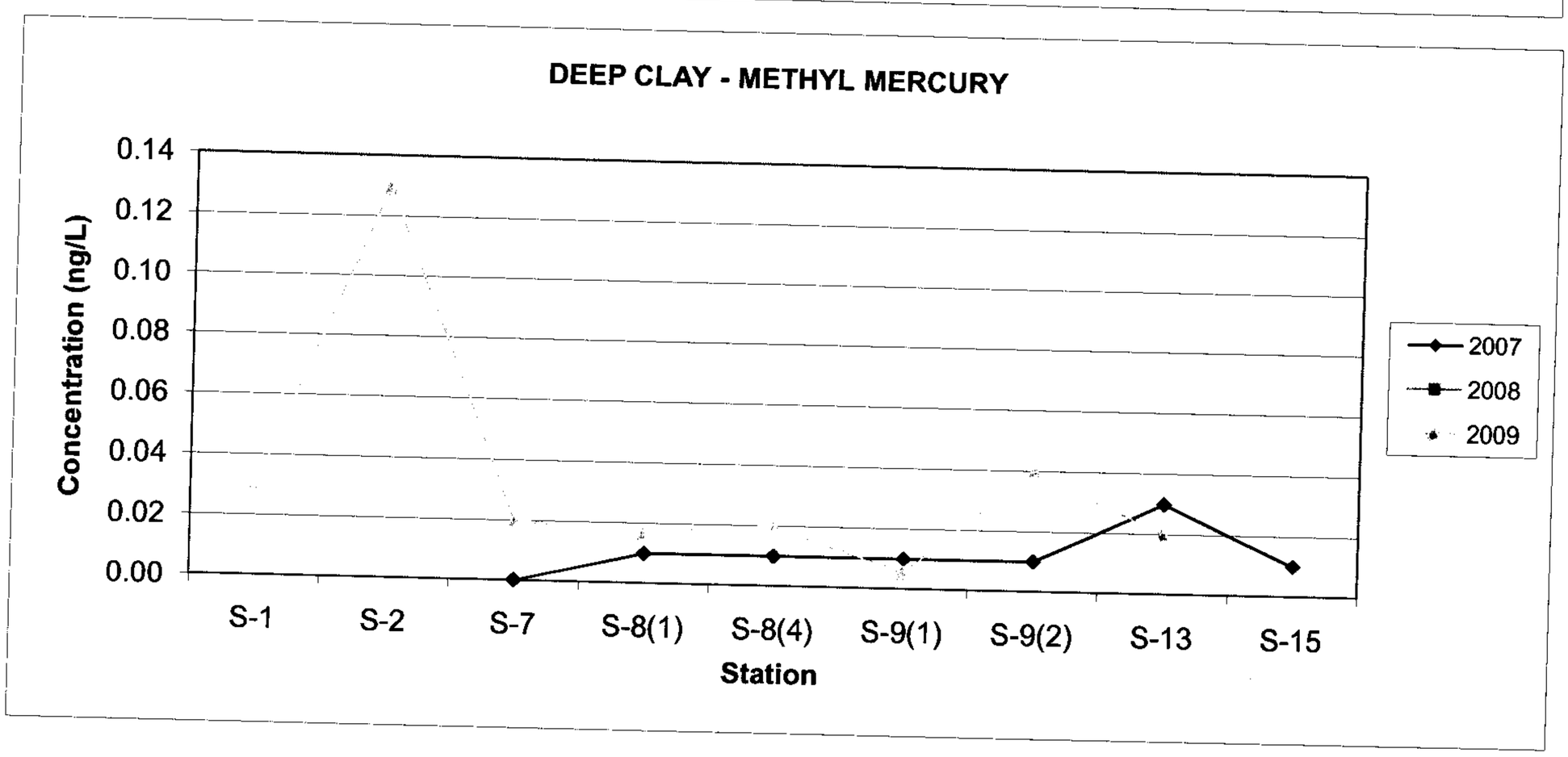
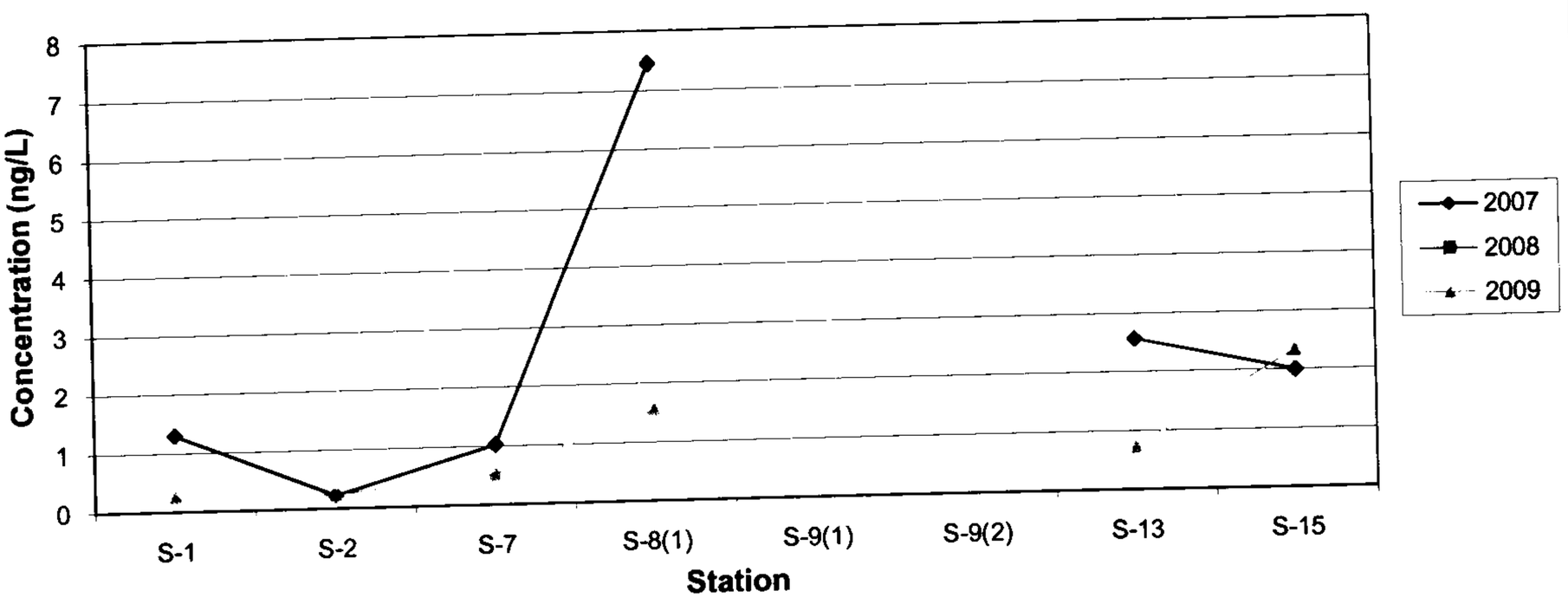


TABLE 2g
MINERAL HORIZON PORE WATER - SHALLOW BEDROCK 2007-2009 (Filtered)

Cluster Location	Total Mercury			Methyl Mercury		
	2007	2008	2009	2007	2008	2009
S-1	1.3		0.27	0.01		0.06
S-2	0.23		0.24	0.00		0.05
S-7	1.02		0.53	0.09		0.05
S-8(1)	7.46		1.56	0.03		0.03
S-9(1)						
S-9(2)						
S-13	2.57		0.72	0.00		0.017
S-15	2.00		2.34	0.01		0.37



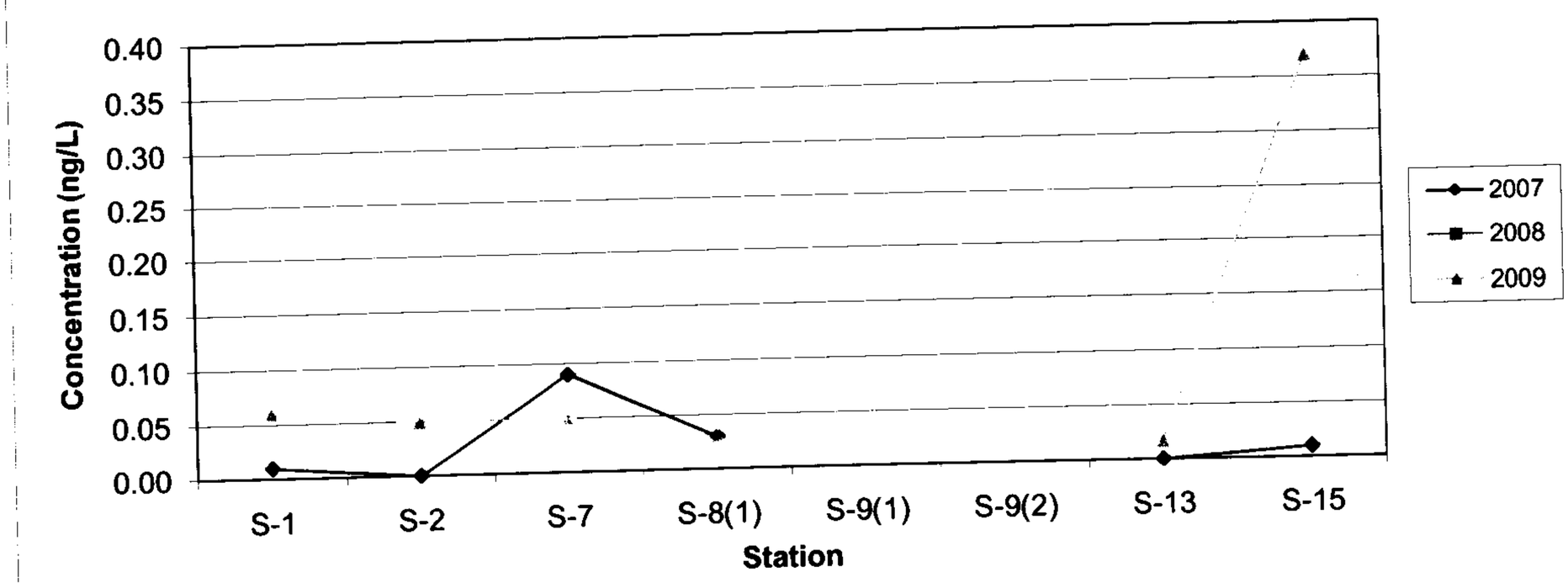
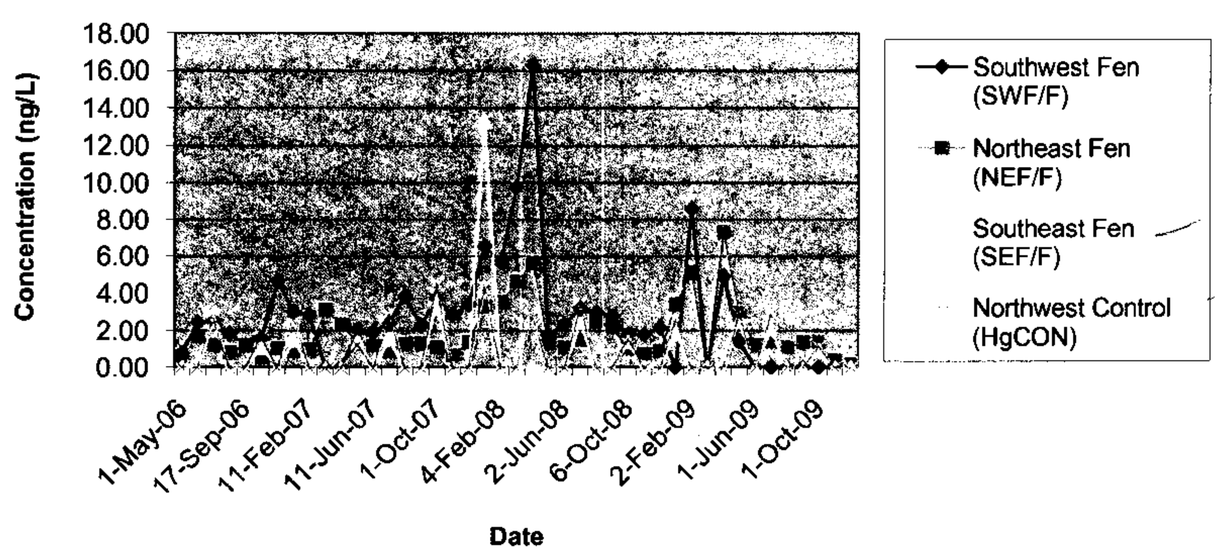


TABLE 3
TOTAL MERCURY - FENS (Unfiltered)
(concentrations in ng/L)

	Southwest Fen (SWF/F)	Northeast Fen (NEF/F)	Southeast Fen (SEF/F)	Northwest Control (HgCON)
1-May-06	0.77	0.62	-	-
5-Jun-06	2.44	1.72	-	-
3-Jul-06	2.49	1.26	2.51	2.64
21-Aug-06	1.86	0.83	-	-
17-Sep-06	1.29	1.25	-	-
3-Oct-06	1.59	0.53	1.09	1.70
4-Dec-06	4.65	1.08	-	-
8-Jan-07	3.01	0.86	1.51	2.77
11-Feb-07	2.84	0.99	-	-
13-Mar-07	Frozen	3.14	-	-
16-Apr-07	Frozen	2.34	-	-
7-May-07	2.07	1.31	1.43	1.25
11-Jun-07	1.96	1.21	-	-
2-Jul-07	2.40	0.87	1.57	2.87
6-Aug-07	3.85	1.30	-	-
12-Sep-07	2.28	1.32	-	-
1-Oct-07	3.74	1.12	3.57	4.51
5-Nov-07	2.86	0.68	-	-
3-Dec-07	3.42	1.41	-	-
27-Jan-08	6.55	3.33	13.30	4.36
4-Feb-08	5.70	3.52	-	-
10-Mar-08	9.79	4.64	-	-
7-Apr-08	16.30	5.67	Frozen	2.80
5-May-08	1.78	1.33	-	-
2-Jun-08	2.37	1.11	-	-
7-Jul-08	3.19	1.54	2.42	3.47
4-Aug-08	2.98	2.51	-	-
1-Sep-08	2.76	2.22	-	-
6-Oct-08	1.84	1.02	1.44	1.60
3-Nov-08	1.80	0.76	-	-
1-Dec-08	2.19	0.92	-	-
1-Jan-09	Frozen	3.43	1.83	2.66
2-Feb-09	8.61	5.14	-	-
Mar-09	-	-	-	-
1-Apr-09	4.89	7.35	-	-
1-May-09	1.44	2.92	2.60	2.91
1-Jun-09	Revoked	1.25	-	-
1-Jul-09	Revoked	1.46	2.12	2.97
1-Aug-09	Revoked	1.11	-	-
1-Sep-09	Revoked	1.42	-	-
1-Oct-09	Revoked	1.41	0.94	1.15
1-Nov-09	Revoked	0.38	-	-
1-Dec-09	Revoked	0.19	-	-
*Average 2009	-	2.31	1.87	2.42
Average All Data	3.62	1.87	2.79	2.69

Revoked ?

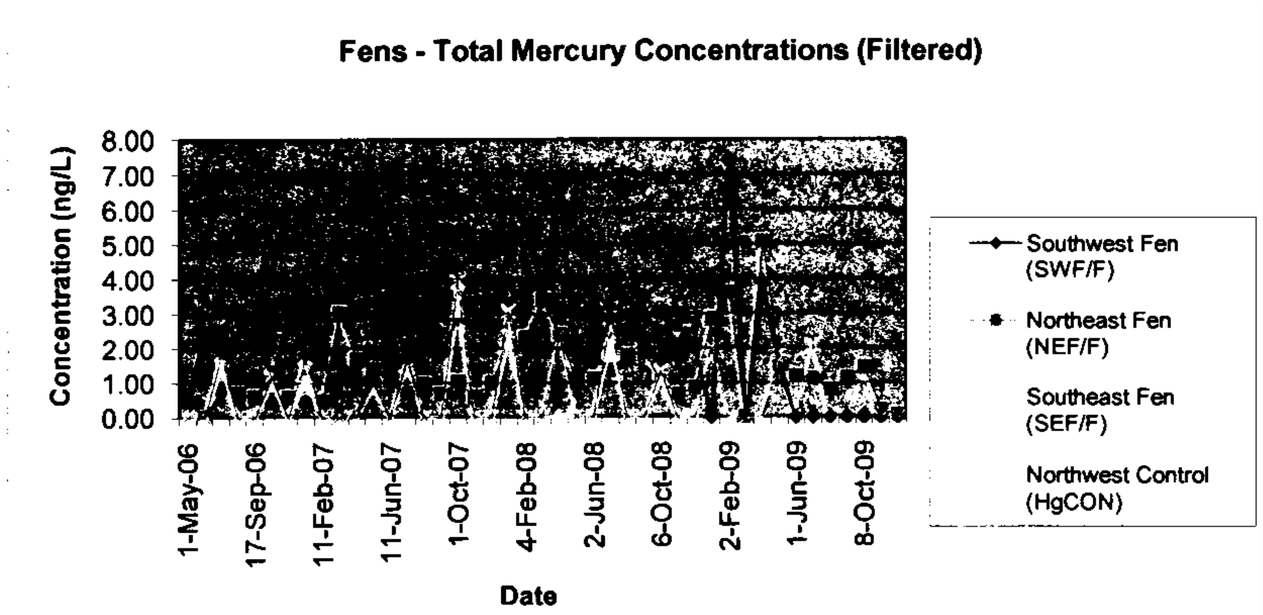
FENS - TOTAL MERCURY CONCENTRATIONS (Unfiltered)



Southwest Fen - Receives effluent from central quarry (2006 only)
Northeast Fen - Receives effluent from plant site excavation, sewage treatment plant and pit sump
Southweast Fen - Control site
Nortwest Control - Control site
2009 average values are only for dates when control samples were collected
* Stations where control sites sampled

TABLE 4
TOTAL MERCURY - FENS (Filtered)
(concentrations in ng/L)5

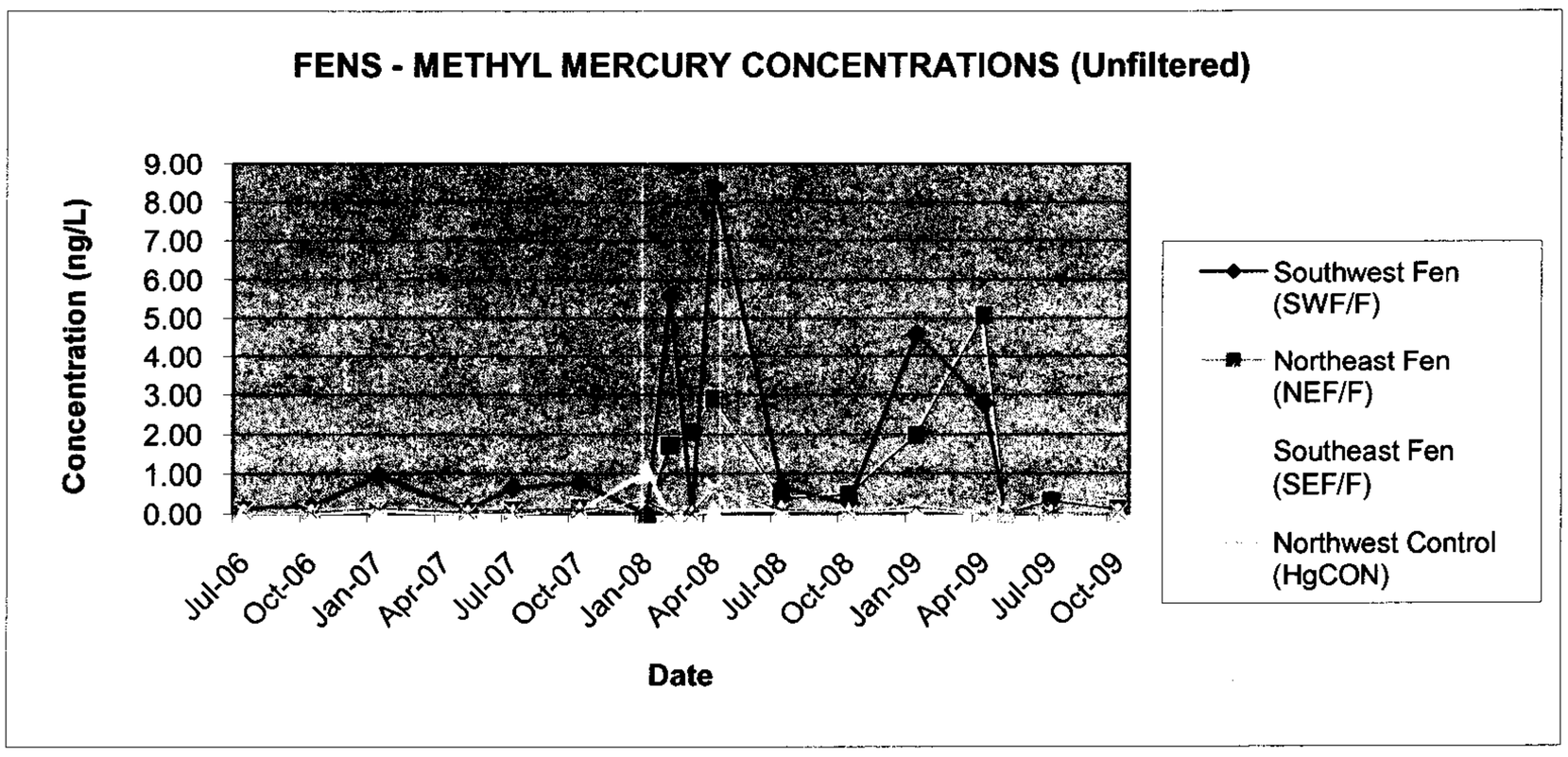
Date	Southwest Fen (SWF/F)	Northeast Fen (NEF/F)	Southeast Fen (SEF/F)	Northwest Control (HgCON)
1-May-06	0.64	0.48	-	-
5-Jun-06	2.32	-	-	-
3-Jul-06	1.96	0.86	1.38	1.82
21-Aug-06	1.34	0.72	-	-
17-Sep-06	1.11	0.61	-	-
3-Oct-06	0.85	0.44	0.94	1.19
4-Dec-06	3.05	0.59	-	-
8-Jan-07	1.86	0.47	1.01	1.73
11-Feb-07	1.90	0.48	-	-
13-Mar-07	Frozen	3.03	-	-
16-Apr-07	Frozen	1.69	-	-
7-May-07	1.31	1.41	0.89	1.03
11-Jun-07	1.24	1.05	-	-
2-Jul-07	1.74	0.70	1.48	1.70
6-Aug-07	2.45	0.98	-	-
12-Sep-07	1.87	0.69	-	-
1-Oct-07	2.89	1.04	3.11	3.92
5-Nov-07	2.66	0.60	-	-
3-Dec-07	3.22	1.00	-	-
27-Jan-08	4.86	2.10	2.21	3.07
4-Feb-08	5.40	2.32	-	-
10-Mar-08	3.79	3.41	-	-
7-Apr-08	6.72	2.41	Frozen	2.41
5-May-08	1.22	1.01	-	-
2-Jun-08	1.63	1.11	-	-
7-Jul-08	2.87	1.38	2.02	2.88
4-Aug-08	2.55	1.81	-	-
1-Sep-08	2.07	1.90	-	-
6-Oct-08	1.71	1.04	1.12	1.33
3-Nov-08	1.77	0.66	-	-
1-Dec-08	2.02	0.86	-	-
5-Jan-09	Frozen	2.86	1.61	2.00
2-Feb-09	7.42	3.62	-	-
Mar-09	-	-	-	-
6-Apr-09	3.89	5.09	-	-
4-May-09	1.44	1.55	2.25	1.85
1-Jun-09	Revoked	1.20	-	-
7-Jul-09	Revoked	1.12	1.49	2.09
3-Aug-09	Revoked	0.79	-	-
7-Sep-09	Revoked	1.15	-	-
8-Oct-09	Revoked	1.46	0.92	1.02
2-Nov-09	Revoked	0.21	-	-
7-Dec-09	Revoked	0.08	-	-
*Average 2009	-	1.75	1.57	1.74
Average All Data	2.56	1.37	1.57	2.00



Southwest Fen - Receives effluent from central quarry (2006 only)
Northeast Fen - Receives effluent from plant site excavation, sewage treatment plant and pit sump
Southweast Fen - Control site
Nortwest Control - Control site
2009 average values are only for dates when control samples were collected
* Stations where control sites sampled

TABLE 5
METHYL MERCURY - FENS
(concentrations in ng/L)

Unfiltered Samples				
Date	**Southwest Fen (SWF/F)**	**Northeast Fen (NEF/F)**	**Southeast Fen (SEF/F)**	**Northwest Control (HgCON)**
Jul-06	0.16	0.10	0.03	0.06
Oct-06	0.20	0.02	0.02	0.05
Jan-07	0.97	0.07	0.07	0.16
May-07	0.14	0.07	0.01	0.04
Jul-07	0.68	0.10	0.02	0.05
Oct-07	0.81	0.15	0.08	0.09
Jan-08	-	-	1.07	0.34
Feb-08	5.58	1.72	-	-
Mar-08	Frozen	2.07	Frozen	Frozen
Apr-08	8.37	2.90	0.07	0.65
Jul-08	0.69	0.40	0.11	0.12
Oct-08	0.27	0.50	0.05	0.04
Jan-09	4.59	1.99	0.12	0.19
Apr-09	2.79	5.08	NR	NR
May-09	Revoked	NR	0.05	0.04
Jul-09	Revoked	0.34	<0.0054	0.03
Oct-09	Revoked	0.12	0.03	0.04



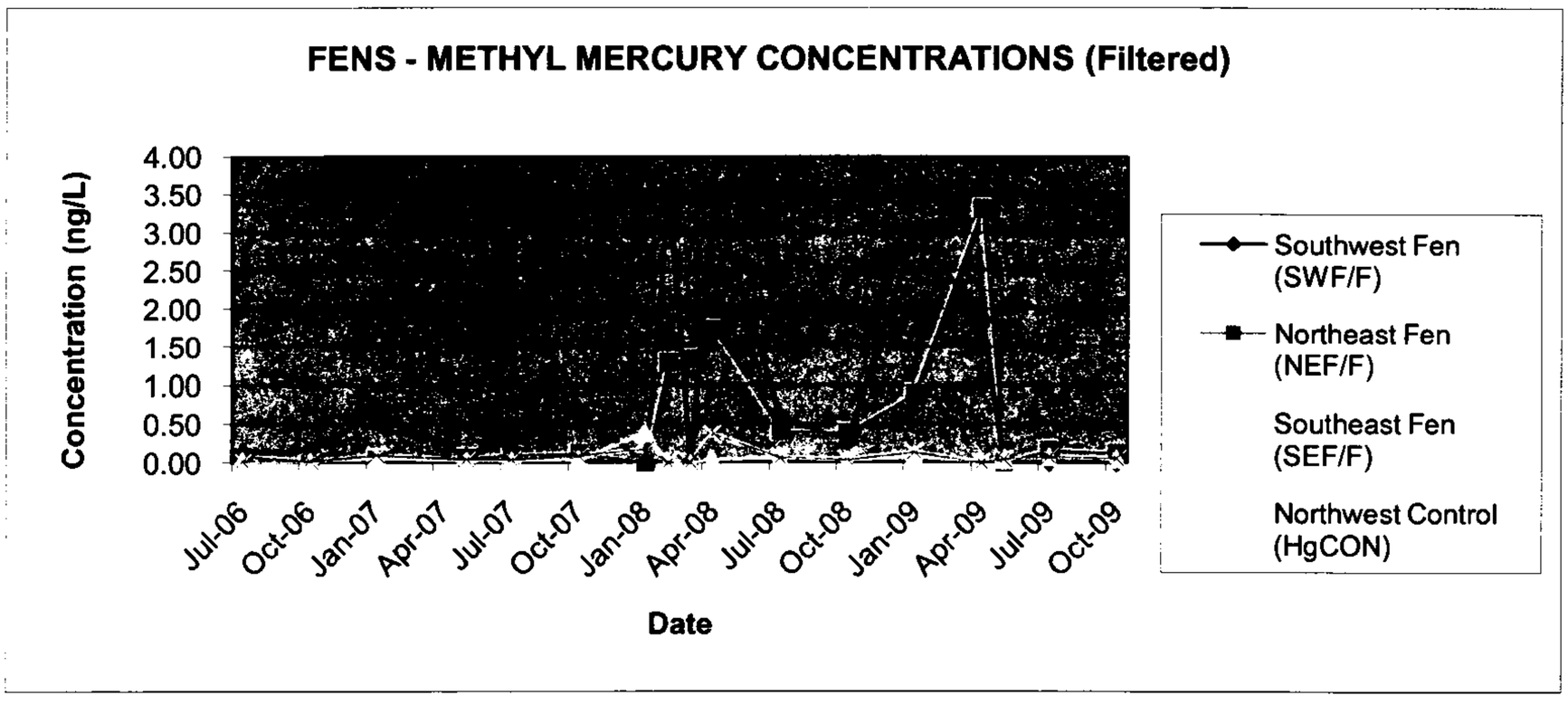
Southwest Fen - Received effluent from the Central Quarry
Northeast Fen - Receives effluent from plant site excavation, sewage treatment plant and pit sump
Southwest Fen - Control site
Northwest Control - Control site

CCME Protection of Aquatic Life Guideline - 4 ng/L (unfiltered)
Quarterly sampling in accordance with Amended C. of A. #3960-7Q4K2G, dated Mar 13, 2009

NR = Not Requested

TABLE 6
METHYL MERCURY - FENS
(concentrations in ng/L)

Filtered Samples				
Date	**Southwest Fen (SWF/F)**	**Northeast Fen (NEF/F)**	**Southeast Fen (SEF/F)**	**Northwest Control (HgCON)**
Jul-06	0.13	0.08	0.02	0.01
Oct-06	0.15	0.02	0.01	0.02
Jan-07	0.68	0.04	0.06	0.10
May-07	0.08	0.06	0.02	0.04
Jul-07	0.30	0.10	0.02	0.04
Oct-07	0.63	0.12	0.04	0.09
Jan-08	-	-	0.39	0.17
Feb-08	3.48	1.29	-	-
Mar-08	Frozen	1.34	Frozen	Frozen
Apr-08	3.42	1.73	0.03	0.37
Jul-08	0.58	0.41	0.08	0.07
Oct-08	0.29	0.39	0.02	0.04
Jan-09	3.03	0.89	0.09	0.14
Apr-09	1.85	3.32	NR	NR
May-09	Revoked	NR	0.05	0.05
Jul-09	Revoked	0.16	0.07	0.08
Oct-09	Revoked	0.13	0.05	0.06



Southwest Fen - Received effluent from the Central Quarry
Northeast Fen - Receives effluent from plant site excavation, sewage treatment plant and pit sump
Southwest Fen - Control site
Northwest Control - Control site

CCME Protection of Aquatic Life Guideline - 4 ng/L (unfiltered)
Quarterly sampling in accordance with Amended C. of A. #3960-7Q4K2G, dated Mar 13, 2009

NR = Not Requested

TABLE 7a
TOTAL MERCURY - RIBBED FEN SURFACE WATERS (Sampled as Peat Pore Water 07/08)
(filtered; concentrations in ng/L)

Date	MS-1-R (ES1-R)	MS-2-R (ES2-R)	MS-7-R (NS7-R)	MS-8-R (NS8-1R)	MS-9(1)-R (SS9-1R)	MS-9(2)-R (SS9-2R)	MS-13-R (WS13-R)	MS-15-R (WS15-R)	MS-V(1)-R (ES2-R)	MS-V(2)-R (SSV2-R)	MS-V(3)-R (SSV3-R)
Aug / Sep-07	1.81	1.56	0.62	1.00	0.72	1.29	0.40	0.43	1.56	-	-
Nov-07	1.67	2.30	0.82	1.36	1.11	1.01	1.70	1.11	2.30	-	-
May-08	2.86	5.56	F	0.91	0.53	F	0.42	0.38	5.56	F	F
Aug-08	2.27	2.02	0.52	0.98	1.26	0.90	0.95	0.92	2.02	0.60	1.69
Oct-08	1.52	1.07	0.72	1.26	1.26	0.70	1.22	0.37	1.07	0.41	1.33
Jan-09	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen
May-09	2.90	1.98	1.92	3.25	2.10	2.40	4.08	2.19	1.98	2.38	3.19
Aug-09	1.00	0.95	0.95	1.38	1.01	1.44	2.54	0.86	0.95	0.94	1.78
Oct-09	1.19	1.01	1.15	1.19	1.18	1.24	2.54	0.75	1.01	0.86	2.01
Average	1.90	2.06	0.96	1.42	1.15	1.28	1.73	0.88	2.06	1.04	2.00

TABLE 7b
METHYL MERCURY - RIBBED FEN SURFACE WATERS (Sampled as Peat Pore Water 07/08)
(filtered; concentrations in ng/L)

Date	MS-1-R (ES1-R)	MS-2-R (ES2-R)	MS-7-R (NS7-R)	MS-8-R (NS8-1R)	MS-9(1)-R (SS9-1R)	MS-9(2)-R (SS9-2R)	MS-13-R (WS13-R)	MS-15-R (WS15-R)	MS-V(1)-R (ES2-R)	MS-V(2)-R (SSV2-R)	MS-V(3)-R (SSV3-R)
Aug / Sep-07	0.02	0.00	0.01	0.00	0.02	0.00	0.13	0.02	0.00	-	-
Nov-07	0.02	0.00	0.01	0.01	0.00	0.02	0.00	0.01	0.00	-	-
May-08	0.11	0.07	F	0.00	0.01	F	0.01	0.02	0.07	F	F
Aug-08	0.07	0.04	0.01	0.01	0.03	0.06	0.00	0.02	0.04	0.00	0.02
Oct-08	0.02	0.01	0.01	0.01	0.02	0.04	0.01	0.02	0.01	0.00	0.01
Jan-09	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen
May / June-09	0.07	0.05	0.02	0.08	0.02	-	0.08	-	0.05	0.04	0.04
Aug-09	0.03	0.05	0.03	0.09	0.02	0.04	0.04	0.11	0.05	0.04	>0.0054
Oct-09	0.05	0.03	0.05	0.06	0.04	0.04	0.09	0.02	0.03	0.05	0.14
Average	0.05	0.03	0.02	0.03	0.02	0.03	0.04	0.03	0.03	0.03	0.05

Notes:

	MS-2-R and MS-v(1)-R are the same stations
F	Frozen - no sample
	Stations located at or inside the Upper Bedrock 2 m drawdown contour
	Stations located outside the Upper Bedrock 2 m drawdown contour

Amended C. of A. #3960-7Q4K2G dated march 13, 2009 provides for annual sampling of peat pore water and quarterly sampling of ribbed fen surface water (the previous C. of A. #4111-7DXKQW dated October 3, 2008 provided for the same sampling frequency

-	MeHg <LQ(0.0169), >DL(0.0054)

TABLE 8
MUSKEG SYSTEM RIBBED FEN GENERAL CHEMISTRY RESULTS - ALL YEARS

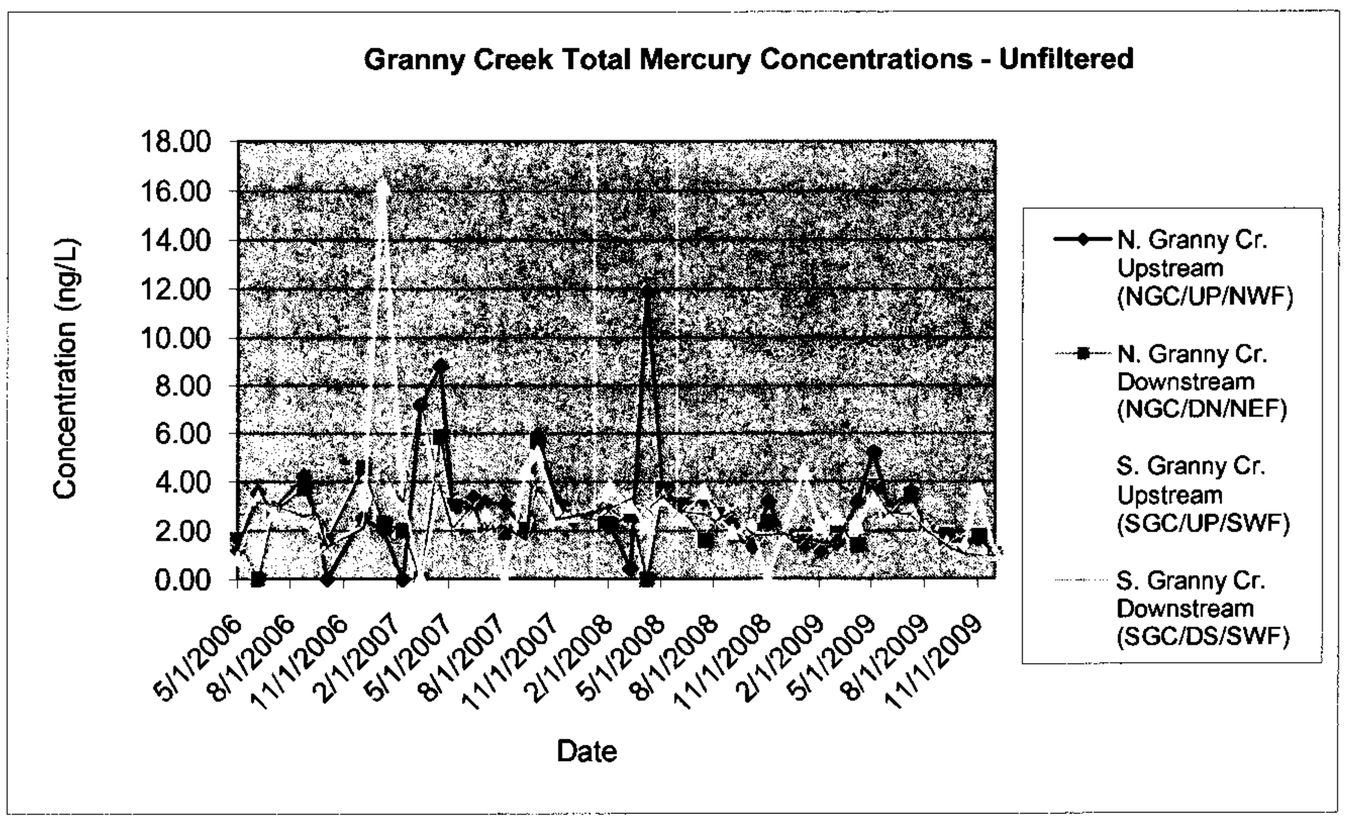
Station	Year	Number of Samples	Parameter										
			Cl (mg/L)	Cond (us/cm)	Nitrate (mg/L)	DOC (mg/L)	pH (units)	SO4 (mg/L)	TP (mg/L)	Ca-D (mg/L)	Fe-D (mg/L)	Mg-D (mg/L)	Na-D (mg/L)
MS-1V-R (ES2-R)	2007	2	0.6	44	<0.1	16.7	6.06	<0.1	0.10	7.2	0.660	0.7	<0.8
	2008	3	0.6	37	<0.1	23.3	5.68	<0.1	0.21	4.6	1.132	0.3	<0.5
	2009	3	0.4	18.7	<0.1	10.0	6.43	<0.1	<0.01	3.4	0.320	0.4	<0.40
MS-2V-R (SSV2-R)	2007	1	1.2	131	<0.1	29.0	6.18	0.2	1.81	24.4	1.910	1.6	0.8
	2008	2	0.9	91	<0.1	35.1	5.87	<0.1	0.06	11.6	0.557	0.5	0.7
	2009	3	0.4	18.7	<0.1	14.8	6.52	<0.1	<0.01	18.9	0.107	2.8	7.1
MS-3V-R (SSV3-R)	2007	1	1.8	141	<0.1	51.6	6.23	0.3	2.47	50.2	5.540	12.0	0.8
	2008	2	1.0	68	<0.1	59.2	5.75	<0.1	0.09	9.5	0.457	1.3	<0.5
	2009	3	0.3	18	<0.1	20.8	5.34	<0.1	<0.01	1.0	0.100	0.1	<0.5
MS-1R (ES1-R)	2007	2	0.6	98	<0.1	21.0	6.17	<0.1	0.20	11.3	0.340	0.8	1.5
	2008	3	0.8	47	<0.1	20.2	5.98	<0.1	0.13	5.5	0.340	0.4	1.2
	2009	3	0.5	26	<0.1	18.9	6.47	<0.1	<0.01	3.4	0.136	0.3	<0.6
MS-7R (NS-7-R)	2007	2	1.1	246	<0.1	28.7	6.33	<0.2	0.14	47.4	1.350	3.6	4.6
	2008	2	0.8	198	<0.1	14.9	6.40	<0.1	0.03	20.5	1.775	2.1	5.8
	2009	2	0.6	30.5	<0.1	13.6	7.14	<0.1	<0.01	2.6	0.165	0.3	0.9
MS-8R (NS-8-1R)	2007	2	85.8	591	<0.1	28.1	6.98	7.0	0.46	28.6	0.078	10.2	92.8
	2008	3	52.5	452	<0.1	33.2	7.13	<0.2	0.08	10.8	0.053	5.8	57.6
	2009	2	1.2	28	<0.1	16.4	6.81	<0.2	<0.01	1.9	0.119	0.48	2.3
MS-9(1)R (SS9-1R)	2007	2	0.5	199	<0.1	19.8	6.65	<0.3	0.22	38.5	0.245	1.0	1.4
	2008	3	0.4	77	<0.2	16.7	5.87	<0.1	0.02	9.8	0.241	0.7	<0.6
	2009	3	0.3	22	<0.1	14.6	6.56	<0.1	<0.02	2.5	0.670	0.2	<0.5
MS-9(2)R (SS9-2R)	2007	2	0.7	70	<0.1	17.8	6.28	<0.1	0.16	12.7	0.398	1.7	<1.1
	2008	2	0.4	79	<0.1	17.2	6.26	<0.1	0.05	10.4	0.847	1.1	1.4
	2009	3	0.5	30	<0.1	13.0	6.98	<0.1	<0.02	3.6	0.087	0.4	<0.53
MS-13R (WS-13R)	2007	2	1.2	248	<0.1	20.9	6.25	<0.1	0.07	47.9	1.360	3.7	4.9
	2008	3	0.8	203	<0.1	67.0	5.91	<0.1	0.06	33.1	1.357	2.5	0.7
	2009	3	0.4	21	<0.1	22.9	4.53	<0.1	<0.01	0.7	0.067	0.1	<0.5
MS-15R (WS15-R)	2007	2	0.8	172	<0.1	11.6	6.43	<0.1	0.04	36.8	0.769	2.6	1.3
	2008	3	0.7	191	<0.1	11.5	6.44	<0.1	0.04	24.0	0.666	1.9	1.0
	2009	3	0.4	50	<0.1	9.8	7.27	<0.1	<0.01	6.8	0.019	0.5	<0.5

MS-8R — This station stands out as being influenced by natural groundwater upwellings, as evidenced by elevated Cl and Na

Beyond zone of dewatering influence

TABLE 9
TOTAL MERCURY - GRANNY CREEK
(unfiltered; concentrations in ng/L)

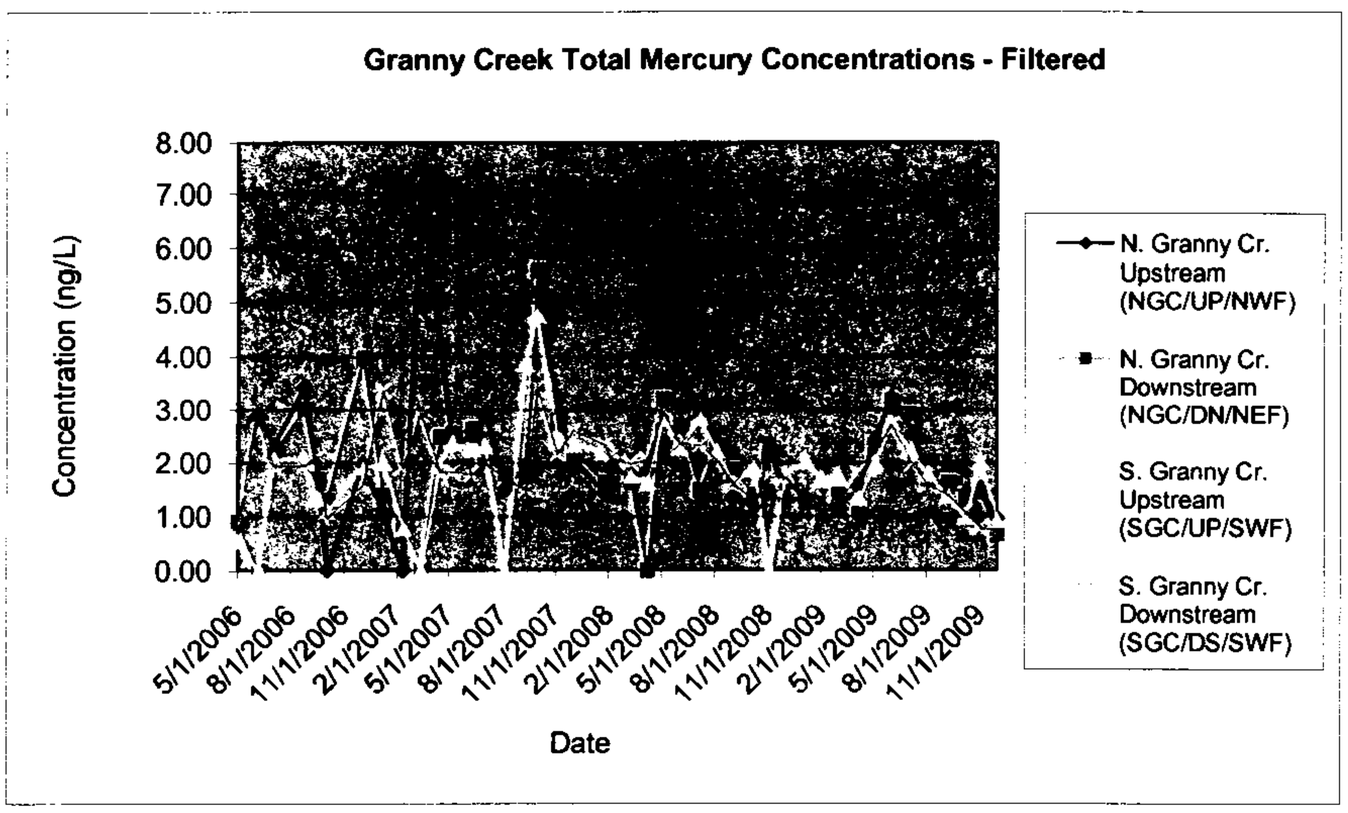
Date	N. Granny Cr. Upstream (NGC/UP/NWF)	N. Granny Cr. Downstream (NGC/DN/NEF)	S. Granny Cr. Upstream (SGC/UP/SWF)	S. Granny Cr. Downstream (SGC/DS/SWF)
1-May-06	1.18	1.66	0.86	1.26
5-Jun-06	3.55	-	3.37	3.16
3-Jul-06	2.92	2.8	2.72	3.08
24-Aug-06	4.21	3.77	2.57	2.6
17-Sep-06	2.37	2.26	2.28	2.74
3-Oct-06	-	1.61	1.34	1.3
4-Dec-06	2.53	4.58	2.23	2.08
8-Jan-07	2.02	2.35	16.2	4.52
11-Feb-07	-	2.02	3.57	3.16
13-Mar-07	7.17	Frozen	Frozen	7.43
16-Apr-07	8.82	5.87	3.72	3.76
7-May-07	3.01	3.02	2.46	2.08
11-Jun-07	3.34	2.99	2.49	3.04
2-Jul-07	3.16	2.23	2.73	2.03
6-Aug-07	3.1	1.94	-	2.17
12-Sep-07	1.96	2.04	4.41	1.61
1-Oct-07	5.91	5.67	5.16	3.79
5-Nov-07	3.19	3.00	2.74	2.49
3-Dec-07	2.42	2.60	2.67	2.61
26-Jan-08	2.95	2.42	2.97	2.94
4-Feb-08	2.19	2.29	3.76	2.91
10-Mar-08	0.46	2.66	3.06	3.35
7-Apr-08	11.90	Frozen	2.19	2.91
5-May-08	3.54	3.73	3.37	3.42
2-Jun-08	3.06	3.08	2.55	2.81
16-Jul-08	3.28	1.61	3.60	2.68
4-Aug-08	2.71	2.69	2.63	2.38
1-Sep-08	1.76	2.32	1.94	2.78
8-Oct-08	1.37	1.57	2.14	1.83
3-Nov-08	3.20	2.39	-	1.81
1-Dec-08	1.82	1.83	1.84	1.88
5-Jan-09	1.41	1.54	4.42	1.64
2-Feb-09	1.18	1.34	2.22	1.52
2-Mar-09	1.48	2.26	2.56	1.45
6-Apr-09	3.19	1.41	2.19	2.98
4-May-09	5.18	3.81	3.31	3.82
1-Jun-09	2.95	2.72	2.65	2.76
8-Jul-09	3.62	3.48	2.70	2.69
3-Aug-09	2.07	2.08	2.06	2.05
7-Sep-09	1.45	1.82	1.47	1.39
8-Oct-09	1.47	1.38	1.40	1.05
2-Nov-09	1.70	1.79	3.65	0.98
1-Dec-09	1.11	1.02	1.08	0.96
Average 2009	2.42	2.18	2.31	2.01
Average All Data	3.07	2.54	3.03	2.56



CCME Protection of Aquatic Life Guideline - 26 ng/L

TABLE 10
TOTAL MERCURY - GRANNY CREEK
(filtered; concentrations in ng/L)

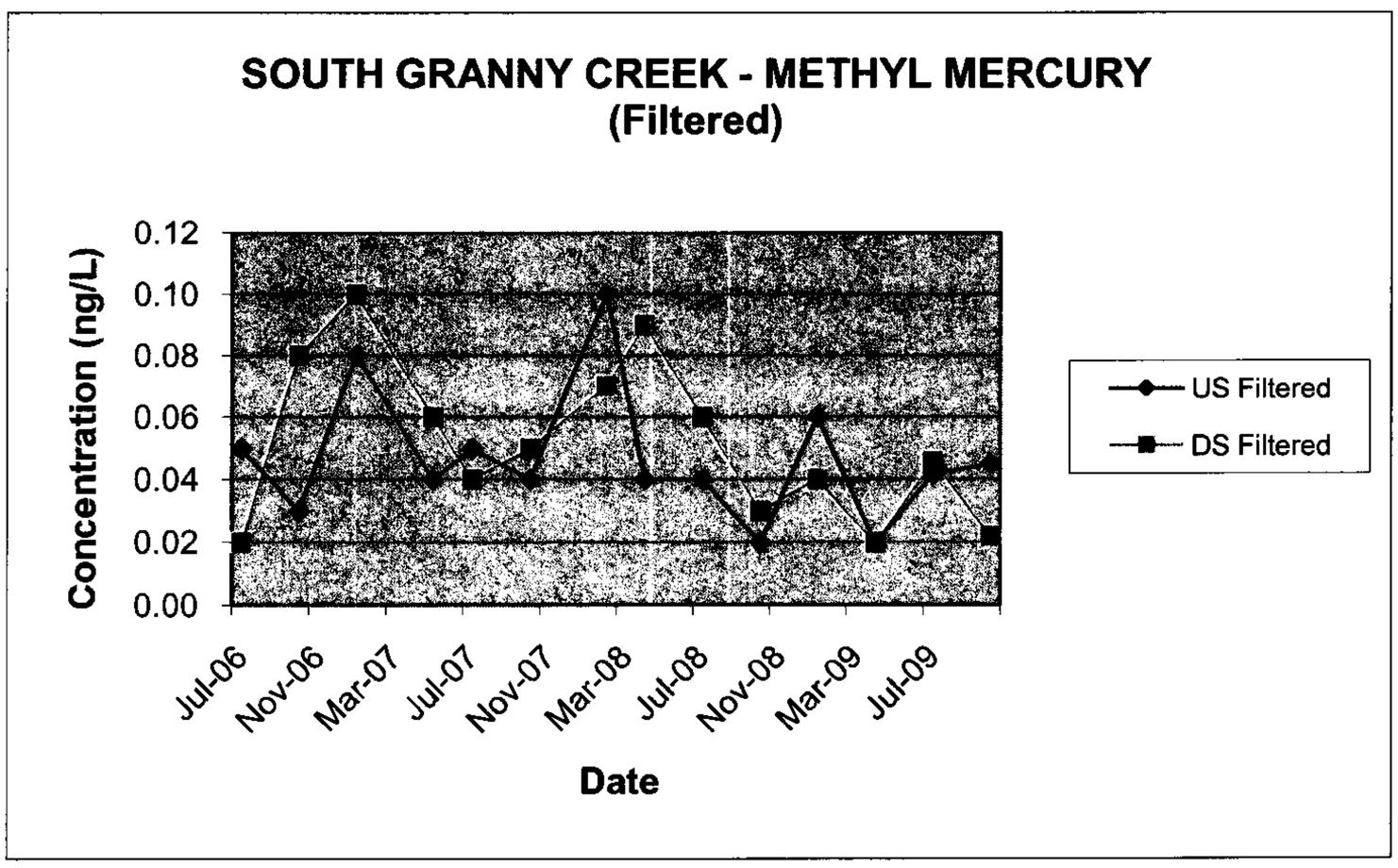
Date	N. Granny Cr. Upstream (NGC/UP/NWF)	N. Granny Cr. Downstream (NGC/DN/NEF)	S. Granny Cr. Upstream (SGC/UP/SWF)	S. Granny Cr. Downstream (SGC/DS/SWF)
1-May-06	0.87	0.90	0.55	0.90
5-Jun-06	2.91	-	-	2.83
3-Jul-06	2.33	2.22	2.07	1.94
24-Aug-06	3.43	3.03	2.07	1.94
17-Sep-06	1.64	1.70	1.34	2.11
3-Oct-06	-	1.30	1.11	0.97
4-Dec-06	1.98	3.98	1.92	1.58
8-Jan-07	1.06	1.40	2.01	3.37
11-Feb-07	-	0.75	0.79	1.90
13-Mar-07	7.05	Frozen	Frozen	2.92
16-Apr-07	4.19	2.50	1.96	1.84
7-May-07	2.40	2.56	2.40	1.83
11-Jun-07	2.51	2.64	2.26	1.79
2-Jul-07	2.96	2.10	2.32	2.01
6-Aug-07	1.52	1.81	-	1.70
12-Sep-07	1.96	1.75	3.87	1.49
1-Oct-07	5.19	5.60	4.76	3.42
5-Nov-07	2.91	2.74	2.45	2.16
3-Dec-07	2.05	2.18	2.35	2.61
26-Jan-08	1.42	1.63	2.21	2.33
4-Feb-08	1.91	1.60	2.24	2.08
10-Mar-08	1.76	1.63	1.76	1.98
7-Apr-08	1.84	Frozen	1.63	2.06
5-May-08	3.16	3.21	2.90	2.97
2-Jun-08	2.74	2.72	2.29	2.36
7-Jul-08	2.95	1.49	2.84	2.32
4-Aug-08	2.39	2.34	2.23	2.06
1-Sep-08	1.35	1.88	1.62	1.60
8-Oct-08	1.19	1.40	1.88	1.27
3-Nov-08	2.28	2.15	-	1.73
1-Dec-08	1.30	1.65	1.77	1.71
5-Jan-09	1.33	1.27	2.05	1.34
2-Feb-09	1.15	1.05	1.68	1.19
2-Mar-09	1.15	1.40	1.75	1.22
6-Apr-09	1.56	1.09	1.34	1.78
4-May-09	2.43	2.34	1.98	2.19
1-Jun-09	3.24	3.19	2.75	2.71
8-Jul-09	2.57	2.93	2.20	1.96
3-Aug-09	1.66	1.69	1.80	1.59
8-Sep-09	1.54	1.63	1.39	1.39
8-Oct-09	1.45	1.38	1.01	1.08
2-Nov-09	1.51	1.45	2.01	0.80
1-Dec-09	0.97	0.68	0.95	0.75
Average 2009	1.81	1.78	1.72	1.55
Average All Data	2.27	2.05	2.05	1.93



CCME Protection of Aquatic Life Guideline - 26 ng/L

TABLE 11
METHYL MERCURY - SOUTH GRANNY CREEK
(concentrations in ng/L)

Date	Upstream SGC/UP/SWF		Downstream SGC/DS/SWF	
	US Unfiltered	US Filtered	DS Unfiltered	DS Filtered
Jul-06	0.06	0.05	0.04	0.02
Oct-06	0.03	0.03	0.11	0.08
Jan-07	0.10	0.08	0.13	0.10
May-07	0.04	0.04	0.06	0.06
Jul-07	0.05	0.05	0.05	0.04
Oct-07	0.05	0.04	0.07	0.05
Feb-08	0.17	0.10	0.11	0.07
Apr-08	0.06	0.04	0.15	0.09
Jul-08	0.06	0.04	0.07	0.06
Oct-08	0.02	0.02	0.04	0.03
Jan-09	0.01	0.06	0.06	0.04
Apr-09	0.08	0.02	0.06	0.02
Jul-09	-	0.04	0.05	0.05
Oct-09	0.02	0.05	0.005	0.02
Mean	0.06	0.05	0.07	0.05



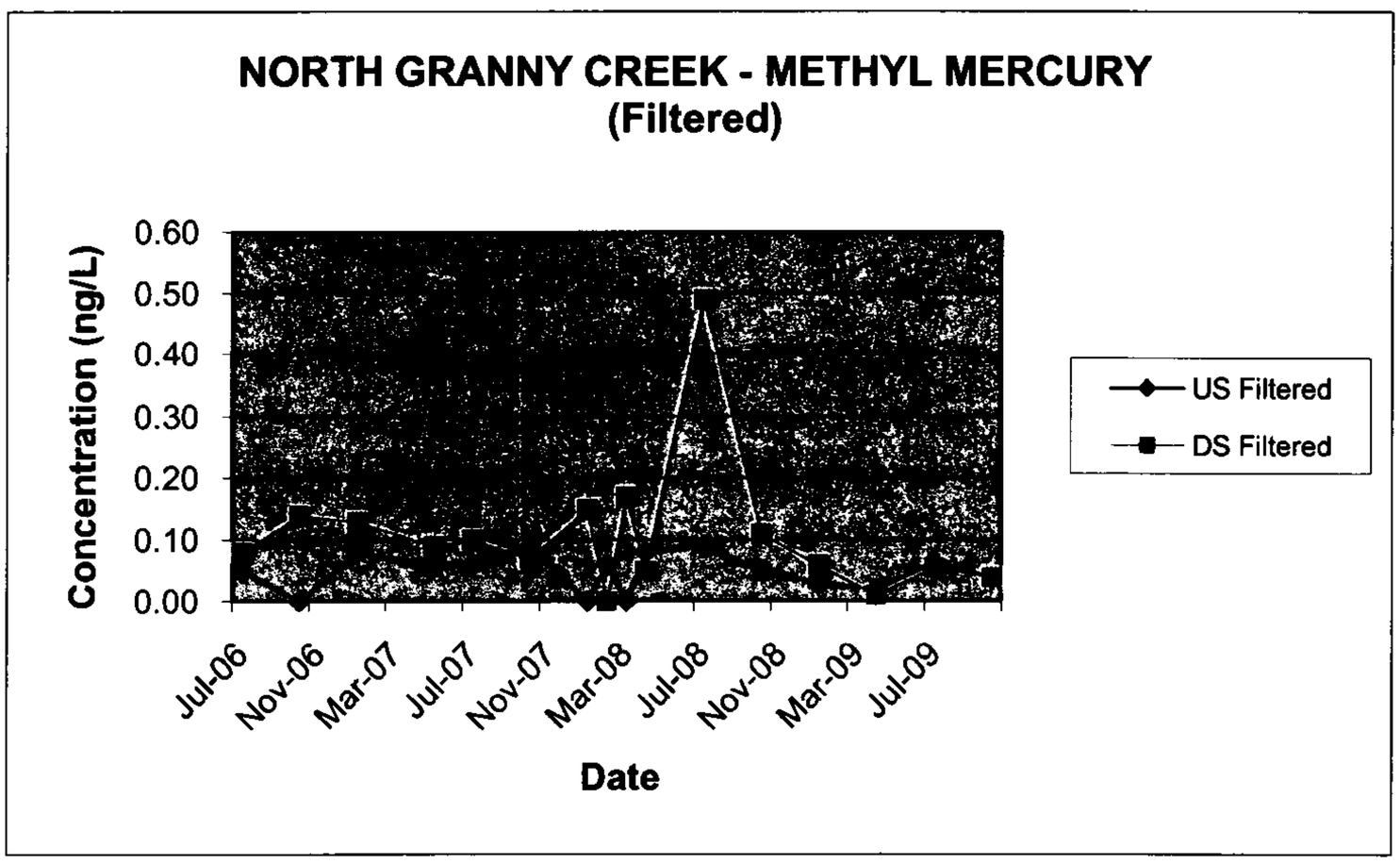
CCME Protection of Aquatic Life Guideline - 4 ng/L (unfiltered)

Quarterly sampling in accordance with Amended C. of A. #3960-7Q4K2G, dated Mar 13, 2009

- MeHg <LQ(0.0169), >DL(0.0054)

TABLE 12
METHYL MERCURY - NORTH GRANNY CREEK
(concentrations in ng/L)

Date	Upstream NGC/UP/NWF		Downstream NGC/DN/NEF	
	US Unfiltered	US Filtered	DS Unfiltered	DS Filtered
Jul-06	0.11	0.05	0.10	0.08
Oct-06	-	-	0.13	0.14
Jan-07	0.12	0.08	0.18	0.13
May-07	0.07	0.06	0.09	0.09
Jul-07	0.09	0.06	0.10	0.10
Oct-07	0.09	0.09	0.10	0.07
Jan-08	-	-	0.26	0.15
Feb-08	0.09	0.06	-	-
Mar-08	-	-	0.29	0.17
Apr-08	0.44	0.08	0.13	0.05
Jul-08	0.09	0.09	0.52	0.49
Oct-08	0.04	0.05	0.11	0.11
Jan-09	0.04	0.03	0.08	0.06
Apr-09	0.04	0.02	0.01	0.01
Jul-09	0.06	0.06	0.02	0.06
Oct-09	-	0.04	0.07	0.04
Mean	0.11	0.06	0.15	0.12



CCME Protection of Aquatic Life Guideline - 4 ng/L (unfiltered)

Quarterly sampling in accordance with Amended C. of A. #3960-7Q4K2G, dated Mar 13, 2009

- MeHg <LQ(0.0169), >DL(0.0054)

TABLE 13a
TOTAL MERCURY - NAYSHKOOTAYAOW AND ATTAWAPISKAT RIVERS
(unfiltered; concentrations in ng/L)

Date	Naysh. R. Upstream (Naysh Riv Up)	Naysh. R. Middle (Naysh Riv DN)	Naysh. R. Downstream (Naysh Riv up Att Riv)	Monument Channel (Naysh Riv Control)	Attawapiskat R. A-1 (Att Riv up 2)	Attawapiskat R. A-2 (Att Riv up A2-1)	Attawapiskat R. A-3 (Att Riv dn A3-1)	Attawapiskat R. A-4 (Att Riv dn Naysh Riv)
Feb-08	1.48	1.47	5.33	0.81	8.75	2.19	10.50	2.20
May-08	4.31	4.58	3.30	3.15	3.41	3.64	3.64	3.61
Aug-08	1.98	2.14	2.28	2.13	1.91	2.32	2.09	1.82
Oct-08	2.30	2.31	2.53	1.86	1.93	1.25	1.72	1.79
Jan-09	1.39	1.19	2.00	1.07	1.39	2.09	2.35	1.34
Feb-09	-	-	-	-	-	2.17	1.84	-
Mar-09	-	-	-	-	-	1.36	1.28	-
Apr-09	-	1.00	1.47	0.69	1.36	1.26	1.93	1.22
May-09	5.26	-	-	-	-	4.17	3.19	-
Jun-09	-	-	-	-	-	2.81	2.57	-
Jul-09	2.80	2.58	2.47	2.83	3.58	3.23	3.48	3.50
Aug-09	-	-	-	-	-	1.69	1.79	-
Oct-09	0.80	0.70	1.33	1.07	1.58	1.25	1.39	1.35
Nov-09	-	-	-	-	-	1.07	1.13	-
Dec-09	-	-	-	-	-	0.81	0.96	-
Average	**2.54**	**2.00**	**2.59**	**1.70**	**2.99**	**2.09**	**2.66**	**2.10**

TABLE 13b
TOTAL MERCURY - NAYSHKOOTAYAOW AND ATTAWAPISKAT RIVERS
(filtered; concentrations in ng/L)

Date	Naysh. R. Upstream (Naysh Riv Up)	Naysh. R. Middle (Naysh Riv DN)	Naysh. R. Downstream (Naysh Riv up Att Riv)	Monument Channel (Naysh Riv Control)	Attawapiskat R. A-1 (Att Riv up 2)	Attawapiskat R. A-2 (Att Riv up A2-1)	Attawapiskat R. A-3 (Att Riv dn A3-1)	Attawapiskat R. A-4 (Att Riv dn Naysh Riv)
Feb-08	1.15	1.12	2.31	0.69	2.36	2.12	1.73	1.97
May-08	2.71	2.71	2.35	2.57	2.62	2.58	2.80	2.64
Aug-08	1.66	1.71	1.89	1.68	1.57	1.53	1.53	1.49
Oct-08	1.79	1.79	1.90	1.72	1.60	1.24	1.39	1.39
Jan-09	0.96	0.99	1.99	0.80	1.14	1.58	1.49	1.17
Feb-09	-	-	-	-	-	-	-	-
Mar-09	-	-	-	-	-	-	-	-
Apr-09	-	0.78	0.76	0.67	1.08	1.11	1.36	1.06
May-09	2.40	-	-	-	-	2.11	2.07	-
Jun-09	-	-	-	-	-	1.93	1.84	-
Jul-09	1.49	1.43	1.50	1.75	2.36	1.82	2.03	2.34
Aug-09	-	-	-	-	-	1.20	1.22	-
Sep-09	-	-	-	-	-	1.32	1.53	-
Oct-09	0.80	0.68	0.86	0.80	1.05	1.05	1.02	0.94
Nov-09	-	-	-	-	-	0.76	0.69	-
Dec-09	-	-	-	-	-	0.67	0.68	-
Average	**1.62**	**1.40**	**1.70**	**1.34**	**1.72**	**1.50**	**1.53**	**1.63**

Notes: CCME Protection of Aquatic Life Guideline - 26 ng/L
Sampling locations and frequency governed by Amended C. of A. #3960-7Q4K2G, dated March 13, 2009
Bracketted sampling notations are field identifications

TABLE 14a
METHYL MERCURY - NAYSHKOOTAYAOW AND ATTAWAPISKAT RIVERS
(unfiltered; concentrations in ng/L)

Date	Naysh. R. Upstream (Naysh Riv Up)	Naysh. R. Middle (Naysh Riv DN)	Naysh. R. Downstream (Naysh Riv up Att Riv)	Monument Channel (Naysh Riv Control)	Attawapiskat R. A-1 (Att Riv up 2)	Attawapiskat R. A-2 (Att Riv up A2-1)	Attawapiskat R. A-3 (Att Riv dn A3-1)	Attawapiskat R. A-4 (Att Riv dn Naysh Riv)
Feb-08	0.03	0.03	0.09	0.04	0.14	0.03	0.20	0.04
May-08	0.04	0.04	0.01	0.08	0.06	0.07	0.05	0.04
Aug-08	0.06	0.07	0.11	0.14	0.06	0.05	0.03	0.04
Oct-08	0.06	0.05	0.07	0.06	0.04	0.02	0.03	0.02
Jan-09	0.03	0.02	0.04	0.05	0.02	0.04	0.03	0.02
Feb-09	-	-	-	-	-	-	-	-
Apr-09	-	0.03	0.02	0.02	0.03	0.02	0.00	0.03
May-09	0.03	-	-	-	-	0.02	0.02	-
Jun-09	-	-	-	-	-	0.10	0.07	-
Jul-09	0.05	0.05	0.03	0.03	0.04	0.04	0.10	0.02
Oct-09	0.06	0.05	0.05	0.10	0.09	0.06	0.05	0.10
Nov-09	-	-	-	-	-	0.04	0.05	-
Dec-09	-	-	-	-	-	0.08	0.10	-
Average	**0.04**	**0.04**	**0.05**	**0.06**	**0.06**	**0.05**	**0.06**	**0.04**

TABLE 14b
METHYL MERCURY - NAYSHKOOTAYAOW AND ATTAWAPISKAT RIVERS
(filtered; concentrations in ng/L)

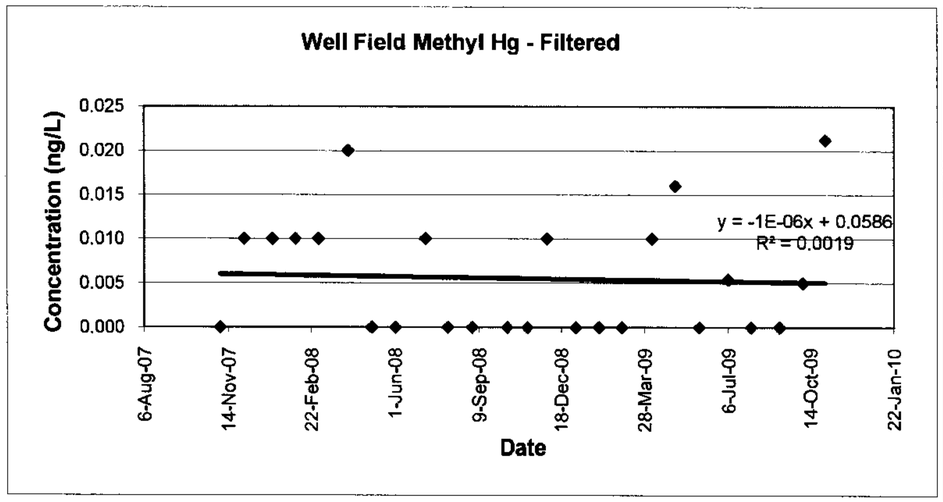
Date	Naysh. R. Upstream (Naysh Riv Up)	Naysh. R. Middle (Naysh Riv DN)	Naysh. R. Downstream (Naysh Riv up Att Riv)	Monument Channel (Naysh Riv Control)	Attawapiskat R. A-1 (Att Riv up 2)	Attawapiskat R. A-2 (Att Riv up A2-1)	Attawapiskat R. A-3 (Att Riv dn A3-1)	Attawapiskat R. A-4 (Att Riv dn Naysh Riv)
Feb-08	0.03	0.02	0.03	0.03	0.04	0.05	0.03	0.04
May-08	0.01	0.03	0.02	0.06	0.01	0.03	0.02	0.03
Aug-08	0.05	0.05	0.06	0.10	0.04	0.02	0.03	0.03
Oct-08	0.03	0.02	0.03	0.04	0.03	0.02	0.02	0.02
Jan-09	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02
Feb-09	-	-	-	-	-	-	-	-
Apr-09	-	0.01	0.01	0.01	0.02	0.02	0.03	0.01
May-09	0.09	-	-	-	-	0.03	0.03	
Jun-09	-	-	-	-	-	0.03	0.03	
Jul-09	0.04	0.10	0.11	0.07	0.15	0.03	0.02	0.03
Aug-09	-	-	-	-	-	0.05	0.03	
Oct-09	0.07	0.04	0.06	0.04	0.04	0.05	0.06	0.07
Nov-09	-	-	-	-	-	0.03	0.15	
Dec-09	-	-	-	-	-	0.08	0.09	
Average	**0.04**	**0.04**	**0.04**	**0.05**	**0.04**	**0.04**	**0.04**	**0.03**

Notes: CCME Protection of Aquatic Life Guideline - 26 ng/L
Sampling locations and frequency governed by Ammended C. of A. #3960-7Q4K2G, dated March 13, 2009
Bracketted sampling notations are field identifications

TABLE 15
MERCURY CONTENT IN WELL FIELD DISCHARGE
(concentrations in ng/L)

Date	Total Mercury		Methyl Mercury		Wells in Production
	Unfiltered	Filtered	Unfiltered	Filtered	
5-Nov-07	1.33	1.32	0.00	0.00	VDW-6, 11 and 22
3-Dec-07	1.33	0.95	0.01	0.01	VDW-6, 11 and 22
6-Jan-08	0.87	0.61	0.01	0.01	VDW-6, 11, 15, 17 and 22
3-Feb-08	1.55	1.27	0.00	0.01	VDW-6, 11 and 22
2-Mar-08	0.70	0.69	0.00	0.01	VDW-6, 11, 15, 17 and 22
7-Apr-08	0.84	0.69	0.02	0.02	VDW-7, 11, 15, 17 and 22
5-May-08	0.78	0.63	0.00	0.00	VDW-7, 11, 15, 17 and 22
2-Jun-08	0.72	0.60	-	-	VDW-7, 11, 15, 17 and 22
7-Jul-08	0.65	0.47	0.01	0.01	VDW-6, 11, 15, 17 and 22
3-Aug-08	2.63	0.99	-	-	VDW-6, 11, 15, 17 and 22
1-Sep-08	0.67	0.57	-	-	VDW-6, 11, 15, 17 and 22
13-Oct-08	2.20	2.01	0.00	0.00	VDW-3, 6, 7, 11, 15, 17 and 22
7-Nov-08	1.00	0.92	0.00	0.00	VDW-3, 6, 7, 11, 15, 17 and 22
1-Dec-08	1.34	1.07	0.01	0.01	VDW-3, 6, 7, 11, 15, 17 and 22
5-Jan-09	1.43	1.14	ns	ns	VDW-3, 6, 7, 11, 15, 17 and 22
2-Feb-09	1.71	1.54	-	-	VDW-3, 6, 7, 11, 15, 17 and 22
1-Mar-09	1.73	1.57	-	-	VDW-3, 6, 7, 11, 15, 17 and 22
6-Apr-09	2.42	2.24	0.01	0.01	VDW-3, 6, 7, 11, 15, 17 and 22
4-May-09	2.53	0.94		0.016	VDW-3, 6, 7, 11, 15, 17 and 22
1-Jun-09	0.72	1.78	0.0397	-	VDW-3, 6, 7, 11, 15, 17 and 22
6-Jul-09	1.69	0.75	0.0928	0.0054	VDW-3, 6, 7, 11, 15, 17 and 22
3-Aug-09	4.22	2.09	0.0054	-	VDW-3, 6, 7, 11, 15, 17 and 22
7-Sep-09	0.77	1.32		-	VDW-3, 6, 7, 11, 15, 17 and 22
5-Oct-09	0.63	0.23	0.017	0.005	VDW-3, 6, 7, 11, 15, 17 and 22
1-Nov-09	ns	ns	ns	0.0212	VDW-3, 6, 7, 11, 15, 17 and 22
7-Dec-09	0.34	0.15	0.0776	0.122	VDW-3, 6, 7, 11, 15, 17 and 22
Average	1.39	1.06	0.02	0.02	

CEQG-PAL: Total mercury - 26 ng/L; methyl mercury - 4 ng/L



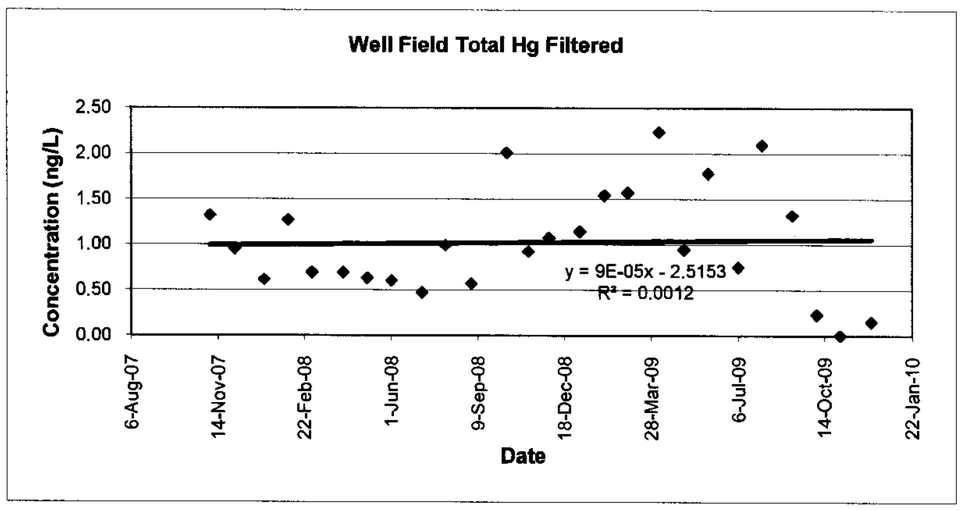


TABLE 16a
TOTAL MERCURY - INDIVIDUAL MINE DEWATERING WELLS
(unfiltered; concentrations in ng/L)

Date	VDW-3	VDW-6	VDW-7	VDW-11	VDW-15	VDW-17	VDW-22
Nov-07	-	-	-	-	-	-	-
Dec-07	-	0.07	-	1.31	-	-	3.08
Jan-08	-	0.06	-	1.64	0.29	0.09	3.66
Feb-08	-	0.12	-	1.41	-	-	3.13
Mar-08	-	0.33	-	2.93	0.22	0.28	3.26
Apr-08	-	-	-	1.89	0.64	0.31	4.27
Jul-08	-	0.14	-	2.18	0.20	0.19	2.28
Oct-08	0.03	0.05	0.42	38.60	0.07	0.06	6.52
Jan-09	0.04	0.02	0.25	3.33	0.07	0.10	6.56
Apr-09	0.03	0.05	-	3.34	0.03	0.10	5.59
Jul-09	0.74	0.52	1.11	3.50	0.69	0.85	4.37
Oct-09	0.14	0.63	0.16	1.55	0.41	0.09	1.61
Average	**0.20**	**0.20**	**0.49**	**5.61**	**0.29**	**0.23**	**4.03**

TABLE 16b
TOTAL MERCURY - INDIVIDUAL MINE DEWATERING WELLS
(filtered; concentrations in ng/L)

Date	VDW-3	VDW-6	VDW-7	VDW-11	VDW-15	VDW-17	VDW-22
Nov-07	-	0.08	-	1.07	-	-	2.36
Dec-07		0.08	-	0.96			2.27
Jan-08	-	0.05	-	1.01	0.08	0.12	1.87
Feb-08	-	0.10	-	1.17	-	-	2.74
Mar-08	-	0.25	-	0.14	0.09	0.17	2.92
Apr-08	-	-	-	1.21	0.18	0.35	3.71
Jul-08	-	0.18	-	1.56	0.15	0.18	1.82
Oct-08	0.05	0.06	0.41	17.40	0.09	0.06	6.09
Jan-09	0.02	0.01	0.19	2.30	0.05	0.09	4.63
Apr-09	0.04	0.06	-	3.34	0.03	0.08	5.28
Jul-09	0.61	0.62	0.60	1.12	0.58	0.45	0.95
Oct-09	0.09	0.34	0.10	0.49	0.36	0.08	0.38
Average	**0.16**	**0.17**	**0.33**	**2.65**	**0.18**	**0.18**	**2.92**

Notes: CCME Protection of Aquatic Life Guideline - 26 ng/L
Average values for VDW-11 exclude the anomalous Oct 2008 value
Sampling locations and frequency governed by Amended C. of A. #3960-7Q4K2G, dated March 13, 2009

TABLE 17a
METHYL MERCURY - INDIVIDUAL MINE DEWATERING WELLS
(unfiltered; concentrations in ng/L)

Date	VDW-3	VDW-6	VDW-7	VDW-11	VDW-15	VDW-17	VDW-22
Nov-07	-	-	-	-	-	-	-
Dec-07	-	0.00	-	0.01	-	-	0.01
Jan-08	-	0.01	-	0.01	0.01	0.01	0.01
Feb-08	-	0.00	-	0.00	-	-	0.00
Mar-08	-	0.02	-	0.02	0.02	0.01	0.02
Apr-08	-	-	-	0.01	0.01	0.00	0.00
Jul-08	-	0.01	-	0.02	0.02	0.02	0.01
Oct-08	0.00	0.01	0.01	0.01	0.00	0.01	0.01
Jan-09	-	-	-	-	-	-	-
Apr-09	0.01	0.01	n/s	0.02	0.02	0.00	0.00
Jul-09	0.03	-	-	0.01	-	-	-
Oct-09	0.005	0.005	0.005	0.005	0.005	0.005	0.0354
Average	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**

TABLE 17b
METHYL MERCURY - INDIVIDUAL MINE DEWATERING WELLS
(filtered; concentrations in ng/L)

Date	VDW-3	VDW-6	VDW-7	VDW-11	VDW-15	VDW-17	VDW-22
Nov-07	-	0.01	-	0.01	-	-	0.00
Dec-07	-	0.01	-	0.00	-	-	0.01
Jan-08	-	0.01	-	0.01	0.01	0.01	0.01
Feb-09	-	0.01	-	0.01	-	-	0.01
Mar-09	-	0.00	-	0.01	0.01	0.01	0.02
Apr-08	-	-	-	0.01	0.02	0.01	0.02
Jul-08	-	0.02	-	0.00	0.01	0.01	0.02
Oct-08	0.01	0.00	0.00	0.00	0.01	0.01	0.01
Jan-09	-	-	-	-	-	-	-
Apr-09	0.01	0.02	n/s	0.02	0.02	0.01	0.02
Jul-09	0.05	0.18	-	0.06	0.03	0.14	0.03
Oct-09	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Average	**0.02**	**0.03**	**0.00**	**0.01**	**0.01**	**0.03**	**0.01**

Notes: CCME Protection of Aquatic Life Guideline - 26 ng/L
Sampling locations and frequency governed by Amended C. of A. #3960-7Q4K2G, dated March 13, 2009

TABLE 18
SITE SPECIFIC CATCH SUMMARY FOR SMALL-BODIED FISH MERCURY PROGRAM 2009

Sample ID	Location	Species						
		Brook Stickleback	Common White Sucker	Finescale Dace	Pearl Dace	Trout Perch	Yellow Perch	Grand Total
ATT-DS-1	directly downstream of Att. R. Discharge	0	16	0	0	35	11	62
ATT-DS-2	approx 2 km downstream of discharge	0	1	0	14	34	16	65
ATT-US-1	approx 9 km upstream of discharge	0	4	0	6	20	24	54
NAY-DS-T6	Naysh from Granny Creek and downstream 500 m	0	20	0	17	27	0	69
NAY-US-T3	Naysh 50 to 250 m upstream of Trib 3	0	12	0	23	1	0	36
NGC	North Granny Creek upstream from 100 m to 1 km upstream of the intake	16	1	20	18	0	0	55
SGC	South Granny Creek at supplementation line	27	2	27	19	0	0	76
ST-5A	Upstream in Trib 5A muskeg reach	20	11	22	32	0	0	85
Grand Total		63	67	69	129	117	51	502

TABLE 19
SPECIES-SPECIFIC CATCH PER UNIT EFFORT FOR ELECTROFISHING BY LOCATION

Waterbody		Attawapiskat R.			Nayshkootayaow R.		North Granny Creek		South Granny Creek		Tributary 5A	Total Species CPUE
Sample ID		ATT-DS-1	ATT-DS-2*	ATT-US-1	Naysh-DS-T6	NAYSH TRIB 3	NGC-EF	NGC*	SGC-EF	SGC*	ST-5A-1	
Date		08/23/09	08/23/09	08/24/09	08/20/09	08/19/09	06/15/09	08/26/09	06/15/09	08/28/09	08/28/09	
Electrofishing Seconds		2836	5930	3840	2852	1511	986	5685	1369	7209	1832	
Species-specific Catch per 1000 Electrofishing Seconds (# fish/sec*1000)	White Sucker	5.64	0.34	1.04	26.65	7.28	1.01	2.11	0	3.05	0.55	47.67
	Trout Perch	12.34	5.73	5.21	9.47	0.66	0.00	0.00	0.00	0.00	0.00	33.41
	Emerald Shiner	0.71	0	0.52	0	0	0	0	0	0	0	1.23
	Yellow Perch	3.88	2.70	10.94	0	0	0	0	0	0	0	17.51
	Pearl Dace	0	2.36	1.56	5.96	15.22	0	2.81	2.92	0.28	7.64	38.76
	Johnny Darter	0	1.01	0	0.35	1.99	0	0	0	0	0	3.35
	Mottled Sculpin	0	0.34	0	1.05	0	1.01	0	0	0	0	2.40
	Northern Pike	1.06	1.18	1.04	0.35	0	0	0	0	0	0	3.63
	Brook Stickleback	0	0	0	0	0	0	2.81	0	4.44	6.00	13.26
	Walleye	1.06	0.34	0	0	0	0	0	0	0	0	1.40
	Burbot	0	0.17	0	0	0	0	0	0	0	0	0.17
	Lake Whitefish	0	0	0.26	0	0	0	0	0	0	0	0.26
	Spottail Shiner	0	0	0.26	0	0	0	0	0	0	0	0.26
	Lake Chub	0	0	0	0	0	0	0.70	0	0	0	0.70
	Longnose Sucker	0	0	0	0	0	3.04	0.18	2.19	0	0	5.41
	Brook Trout	0	0	0	0	0	0	0.18	0	0.97	0	1.15
	Finescale Dace	0	0	0	0	0	0	0	4.38	0.42	1.09	5.89
	Iowa Darter	0	0	0	0	0	0	0	0	0.14	0	0.14
CPUE Total		24.68	14.17	20.83	43.83	25.15	5.07	8.80	9.50	9.29	15.28	

Notes

* Effort consisted of multiple sampling events

TABLE 20
SPECIES-SPECIFIC CATCH PER UNIT EFFORT FOR MINNOW TRAPPING BY LOCATION

Waterbody		Tributary 5A		South Granny Creek		North Granny Creek		Nayshkootayaow R.			CPUE Total
Sample ID		ST-5A-MT	ST-5A-2	SGC-MT	SGC-MN-1	NGC-MT	NGC-1	NAY-US-T3	NAY-DS-T6	NAY-US-T3	
Date		06/20/09	08/29/09	06/20/09	08/27/09	06/20/09	08/22/09	06/13/09	06/15/09	08/20/09	
# Traps		6	4	6	9	6	6	6	6	6	
Hours		22	40	22	96	22	42	16.5	11	24	
Trap Hours (# traps*hours)		132	160	132	864	132	252	99	66	144	
Species-specific Catch per 100 Trap Hours (# fish/trap hours*100)	White Sucker	3.79	6.25	0	0.23	0	0	6.06	0	0.69	17.02
	Brook Stickleback	12.88	5.63	3.79	0.12	0	0	1.01	0	0	23.42
	Northern Pearl Dace	27.27	117.50	9.85	0.46	0	0.79	3.03	0	0	158.91
	Finescale Dace	0	6.88	33.33	0	0	0	1.01	0	0	41.22
	Brook Trout	0	0	0.76	0	0	0	0	0	0	0.76
	Longnose Sucker	0	0	0	0.12	0	0	1.01	0	0	1.13
	Slimy Sculpin	0	0	0	0	0	0	0	1.52	0	1.52
	Iowa Darter	0	0	0	0.23	0	0	0	0	0	0.23
	Johnny Darter	0	0	0	0.12	0	0	0	0	0	0.12
CPUE Total		43.94	136.25	47.73	1.27	0	0.79	12.12	1.52	0.69	

TABLE 21
SUMMARY OF PRESENTED FISH BODY BURDEN COMPARISONS FOR 2009

NGC / SGC / ST-5A	Brook Stickleback, Finescale Dace, Pearl Dace
NAY-US-T3 / NAY-DS-T6	Pearl Dace
ATT-US-1 / ATT-DS-1 / ATT-DS-2 / NAY-DS-T6	Trout Perch
ATT-US-1 / ATT-DS-1 / ATT-DS-2	YOY Yellow Perch

TABLE 22
BROOK STICKLEBACK DESCRIPTIVE STATISTICS

Total Length (mm)							
Area	Mean	N	SD	SE	Min	Max	Median
NGC	35	16	12.3	3.07	19	60	34
SGC	31	27	12.0	2.32	18	59	27
ST5A	37	20	11.9	2.66	24	61	34
Round Weight (g)							
Area	Mean	N	SD	SE	Min	Max	Median
NGC	0.54	16	0.52	0.13	0.07	2.17	0.45
SGC	0.40	27	0.51	0.10	0.06	1.99	0.18
ST5A	0.62	20	0.64	0.14	0.13	2.29	0.36
Total Hg (µg/g)							
Area	Mean	N	SD	SE	Min	Max	Median
NGC	0.044	16	0.027	0.007	0.018	0.112	0.037
SGC	0.069	27	0.046	0.009	0.016	0.200	0.066
ST-5A	0.030	20	0.023	0.005	0.010	0.094	0.018

TABLE 23
COMPARISON BROOK STICKLEBACK ENDPOINT FACTORS BY ANOVA

Total Length (log transformed)						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between Groups	0.078	2	0.039	1.921	0.155	N
Error	1.224	60	0.020			
Weight (log transformed)						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between Groups	0.660	2	0.330	2.085	0.133	N
Error	9.490	60	0.158			
Mercury Concentratrion (arcsin transformed)						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between Groups	0	2.00	0.05	8.839	< 0.001	Y
Error	0	60.00	0.01			

TABLE 24
COMPARISON OF MERCURY BODY BURDEN AT TOTAL LENGTH FOR BROOK STICKLEBACK BETWEEN NGC, SGC AND ST-5A

Regression - Mercury Body Burden @ Total Length						
Area	*n*	*Slope*	*SE*	*R^2*	*(p-value)*	*sig p<0.05*
NGC	16	0.00065	0.021	0.09	0.271	N
SGC	27	0.00085	0.025	0.05	0.261	N
ST-5A	20	0.00120	0.014	0.40	0.003	Y

TABLE 25
FINESCALE DACE DESCRIPTIVE STATISTICS

Total Length (mm)							
Area	Mean	N	SD	SE	Min	Max	Median
NGC	34	20	2.84	0.63	30	40	33
SGC	54	27	5.96	1.15	38	67	53
ST-5A	60	22	19.96	4.26	29	97	60
Round Weight (g)							
Area	Mean	N	SD	SE	Min	Max	Median
NGC	0.24	20	0.05	0.01	0.20	0.30	0.20
SGC	1.71	27	0.65	0.12	0.28	3.60	1.70
ST-5A	2.84	22	2.45	0.52	0.30	9.08	2.31
Total Hg (µg/g)							
Area	Mean	N	SD	SE	Min	Max	Median
NGC	0.065	20	0.029	0.007	0.032	0.153	0.057
SGC	0.255	27	0.080	0.015	0.075	0.396	0.276
ST-5A	0.071	22	0.037	0.008	0.032	0.167	0.056

TABLE 26
COMPARISON FINESCALE DACE ENDPOINT FACTORS BY ANOVA

Total Length (log transformed)						
Source of	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between	0.675	2	0.337	37.735	< 0.001	Y
Error	0.590	66	0.009			
Weight (log transformed)						
Source of	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between	10	2	5.23	64.212	< 0.001	Y
Error	5	66.00	0.08			
Mercury Concentratrion (arcsin transformed)						
Source of	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between	1.16	2	0.58	92.388	< 0.001	Y
Error	0.42	66.00	0.01			

TABLE 27
COMPARISON OF MERCURY BODY BURDEN AT TOTAL LENGTH FOR FINESCALE DACE BETWEEN NGC, SGC AND ST-5A

Regression - Mercury Body Burden @ Total Length						
Area	***n***	***Slope***	***SE***	***R^2***	***(p-value)***	***sig p<0.05***
NGC	20	0.00082	0.030	0.01	0.741	N
SGC	27	0.00596	0.073	0.20	0.020	Y
ST-5A	22	0.00115	0.030	0.38	0.002	Y

TABLE 28
PEARL DACE DESCRIPTIVE STATISTICS

Total Length (mm)							
Area	Mean	N	SD	SE	Min	Max	Median
ATT-US-1	33	6	3.8	1.6	26	36	35
ATT-DS-2	35	13	6.0	1.7	27	50	34
NAY-US-T3	47	23	14.0	2.9	26	71	52
NAY-DS-T6	44	17	15.8	3.8	22	71	51
NGC	48	18	16.0	3.8	38	104	44
SGC	67	19	21.8	5.0	27	107	64
ST-5A	75	30	34.0	6.2	24	151	80
Round Weight (g)							
ATT-US-1	0.33	6	0.09	0.04	0.18	0.42	0.34
ATT-DS-2	0.39	13	0.18	0.05	0.17	0.82	0.33
NAY-US-T3	1.04	23	0.74	0.15	0.15	2.65	1.11
NAY-DS-T6	0.97	17	0.78	0.19	0.07	2.80	1.12
NGC	1.45	18	2.43	0.57	0.51	10.79	0.77
SGC	3.39	19	2.88	0.66	0.19	10.35	2.60
ST-5A	6.36	30	6.68	1.22	0.11	27.83	4.79
Total Hg (µg/g)							
ATT-US-1	0.033	6	0.005	0.002	0.029	0.042	0.032
ATT-DS-2	0.070	13	0.031	0.009	0.042	0.163	0.065
NAY-US-T3	0.042	23	0.008	0.002	0.028	0.064	0.042
NAY-DS-T6	0.042	17	0.015	0.004	0.025	0.089	0.038
NGC	0.066	18	0.019	0.005	0.038	0.116	0.062
SGC	0.166	19	0.077	0.018	0.025	0.286	0.196
ST-5A	0.080	30	0.055	0.010	0.011	0.227	0.073

TABLE 29
COMPARISON PEARL DACE ENDPOINT FACTORS BY ANOVA

Total Length (log transformed)						
Source of	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between	1.232	6	0.205	6.982	< 0.001	Y
Error	3.587	122	0.029			
Weight (log transformed)						
Source of	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between	12.818	6	2.14	7.755	< 0.001	Y
Error	33.61	122.00	0.28			
Mercury Concentratrion (arcsin transformed)						
Source of	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between	0.991	6	0.17	26.271	< 0.001	Y
Error	0.77	122.00	0.01	122.00		0.01

TABLE 30

COMPARISON OF MERCURY BODY BURDEN AT TOTAL LENGTH FOR PEARL DACE BETWEEN SAMPLE LOCATIONS

Regression - Mercury Body Burden @ Total Length						
Area	***n***	***Slope***	***SE***	***R^2***	***(p-value)***	***sig p<0.05***
ATT-US-1	6	0.00003	0.005	0.00	0.9589	N
ATT-DS-2	14	0.00019	0.032	0.04	0.4914	N
NAY-US-T3	23	0.00042	0.006	0.51	0.0001	Y
NAY-DS-T6	17	0.00036	0.015	0.14	0.1371	N
NGC	18	0.00097	0.012	0.65	0.0001	Y
SGC	17	0.00114	0.061	0.11	0.1961	N
ST-5A	32	0.00097	0.044	0.38	0.0002	Y

TABLE 31
SUMMARY OF STANDARDIZED LENGTHS AND EXTRAPOLATED MERCURY BODY BURDENS FROM REGRESSION RELATIONSHIPS

Species	Location	Standardized Total Length (mm)	Extrapolated Mercury Body Burden (µg/g)
Brook Stickleback	NGC	40	0.048
	SGC		0.076
	ST-5A		0.032
Finescale Dace	NGC	55	NA
	SGC		0.260
	ST-5A		0.060
Pearl Dace	NGC	60	0.079
	SGC		0.170
	ST-5A		0.065
	NAY-US-T3		0.043
	NAY-DS-T6		0.049
Trout Perch	ATT-US-1	35*	0.045†
	ATT-DS-1		0.079†
	ATT-DS-2		0.114†
	NAY-DS-T6		0.051†
Yellow Perch	ATT-US-1	45	0.040
	ATT-DS-1		0.032
	ATT-DS-2		NA

Notes
NA - Indicates insufficient data associated with regression to extrapolate
* - Derived from size of majority of YOY in samples
† - Median value for site for YOY Trout Perch

TABLE 32
Granny Creek and Tributary 5A Background Methyl Mercury Water Quality Concentrations
(filtered, ng/L)

Date	North Granny Creek US	South Granny Creek US	Tributary 5A
Jul-06	0.05	0.05	
Oct-06		0.03	
Jan-07	0.08	0.08	
May-07	0.06	0.04	
Jul-07	0.06	0.05	
Oct-07	0.09	0.04	
Feb-08	0.06	0.10	0.02
Apr-08	0.08	0.04	0.02
Jul-08	0.09	0.04	0.03
Oct-08	0.05	0.02	0.02
Jan-09	0.03	0.06	0.01
Apr-09	0.02	0.02	0.02
Jul-09	0.06	0.04	0.03
Oct-09	0.04	0.05	0.04
Average	**0.059**	**0.047**	**0.024**

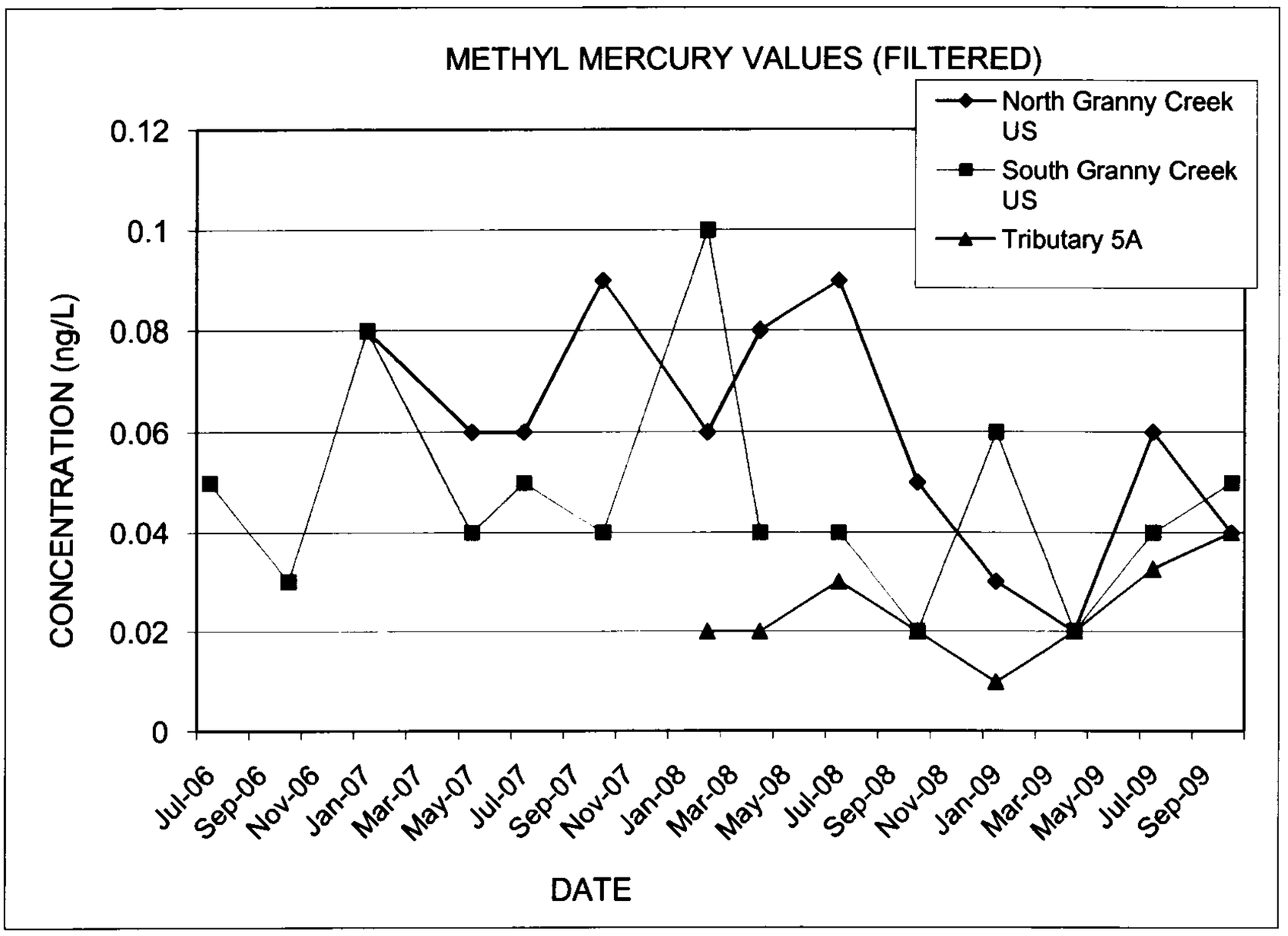


TABLE 33
TROUT-PERCH DESCRIPTIVE STATISTICS

Total Length (mm)							
Area	Mean	N	SD	SE	Min	Max	Median
ATT-US-1	60	20	22.2	4.97	30	97	64
ATT-DS-1	38	35	12.8	2.16	23	70	34
ATT-DS-2	50	34	23.4	4.01	29	104	36
NAY-US-T3	67	1	—	—	67	67	67
NAY-DS-T6	60	27	24.9	4.79	24	92	69
Round Weight (g)							
ATT-US-1	2.83	20	2.65	0.59	0	9	2
ATT-DS-1	0.74	35	0.83	0.14	0	3	0
ATT-DS-2	2.08	34	2.74	0.47	0	10	0
NAY-US-T3	2.86	1	—	—	3	3	3
NAY-DS-T6	3.04	27	2.49	0.48	0	8	3
Total Hg (µg/g)							
ATT-US-1	0.058	20	0.019	0.004	0.030	0.113	0.055
ATT-DS-1	0.192	35	0.212	0.036	0.040	0.760	0.062
ATT-DS-2	0.096	34	0.071	0.012	0.028	0.339	0.074
NAY-US-T3	0.065	1	—	—	0.065	0.065	0.065
NAY-DS-T6	0.098	27	0.051	0.010	0.030	0.227	0.093

TABLE 34
COMPARISON TROUT-PERCH ENDPOINT FACTORS BY ANOVA

Total Length (mm)							
Area	Mean	N	SD	SE	Min	Max	Median
ATT-US-1	60	20	22.2	4.97	30	97	64
ATT-DS-1	38	35	12.8	2.16	23	70	34
ATT-DS-2	50	34	23.4	4.01	29	104	36
NAY-US-T3	67	1	—	—	67	67	67
NAY-DS-T6	60	27	24.9	4.79	24	92	69
Round Weight (g)							
ATT-US-1	2.83	20	2.65	0.59	0	9	2
ATT-DS-1	0.74	35	0.83	0.14	0	3	0
ATT-DS-2	2.08	34	2.74	0.47	0	10	0
NAY-US-T3	2.86	1	—	—	3	3	3
NAY-DS-T6	3.04	27	2.49	0.48	0	8	3
Total Hg (µg/g)							
ATT-US-1	0.058	20	0.019	0.004	0.030	0.113	0.055
ATT-DS-1	0.192	35	0.212	0.036	0.040	0.760	0.062
ATT-DS-2	0.096	34	0.071	0.012	0.028	0.339	0.074
NAY-US-T3	0.065	1	—	—	0.065	0.065	0.065
NAY-DS-T6	0.098	27	0.051	0.010	0.030	0.227	0.093

TABLE 35
COMPARISON OF MERCURY BODY BURDEN AT TOTAL LENGTH
FOR TROUT-PERCH BETWEEN SAMPLE LOCATIONS

Regression - Mercury Body Burden @ Total Length						
Area	***n***	***Slope***	***SE***	***R^2***	***(p-value)***	***sig p<0.05***
ATT-US-1	20	0.00044	0.017	0.26	0.0217	Y
ATT-DS-1	35	-0.00426	0.208	0.07	0.1384	N
ATT-DS-2	34	-0.00124	0.065	0.17	0.0158	Y
NAY-DS-T6	27	0.00163	0.032	0.62	< 0.001	Y

TABLE 36
YOUNG-OF-THE-YEAR YELLOW PERCH DESCRIPTIVE STATISTICS

Total Length (mm)							
Area	Mean	N	SD	SE	Min	Max	Median
ATT-US-1	38	24	8.06	1.65	19	64	38
ATT-DS-1	41	11	2.99	0.90	37	47	41
ATT-DS-2	35	16	2.85	0.71	31	40	36
Round Weight (g)							
Area	Mean	N	SD	SE	Min	Max	Median
ATT-US-1	0.67	24	0.33	0.07	0.23	1.50	0.64
ATT-DS-1	0.85	11	0.18	0.06	0.64	1.36	0.81
ATT-DS-2	0.54	16	0.13	0.03	0.36	0.76	0.53
Total Hg (µg/g)							
Area	Mean	N	SD	SE	Min	Max	Median
ATT-US-1	0.037	24	0.016	0.003	0.013	0.069	0.033
ATT-DS-1	0.030	11	0.008	0.003	0.021	0.052	0.028
ATT-DS-2	0.062	16	0.023	0.006	0.020	0.111	0.061

TABLE 37
COMPARISON YELLOW PERCH ENDPOINT FACTORS BY ANOVA

Total Length (log transformed)						
Source of Va	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between Gro	0.025	2	0.013	2.661	0.08	N
Error	0	48.00	0.005			
Weight (log transformed)						
Source of Va	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between Gro	0.284	2	0.14	5.563	0.007	Y
Error	1	48	0.03			
Mercury Concentratrion (arcsin transformed)						
Source of Va	*SS*	*df*	*MS*	*F*	*P-value*	p<0.05
Between Gro	0.708	2	0.35	12.568	< 0.001	Y
Error	1	48	0.03			

TABLE 38

COMPARISON OF MERCURY BODY BURDEN AT TOTAL LENGTH FOR YELLOW PERCH BETWEEN SAMPLE LOCATIONS

Regression - Mercury Body Burden @ Total Length						
Area	***n***	***Slope***	***SE***	***R^2***	***(p-value)***	***sig p<0.05***
ATT-US-1	24	0.00067	0.016	0.05	0.3146	N
ATT-DS-1	11	0.00139	0.008	0.23	0.1402	N
ATT-DS-2	16	-0.00139	0.024	0.04	0.4619	N

TABLE 39a
MUSKEG MONITORING PROGRAM - STATISTICAL ANALYSIS OF CLUSTER PEAT HORIZON MERCURY PORE WATERS
ANNUAL SAMPLING PROGRAM AUGUST / SEPTEMBER 2009 RESULTS - CLUSTER S-1

TOTAL AND METHYL MERCURY PORE WATER CONCENTRATIONS
(ng/L)

Cluster Location	Substrate/Condition	Well Name	Total Mercury (Filtered)	Methyl Mercury (Filtered)
S-1				
S-2	Peat - Domed Bog	MS-2-D	0.51	0.04
	Peat - Flat Bog	MS-2-F	2.35	0.07
	Peat - Ribbed Fen	MS-2-R	0.38	0.09
S-7	Peat - Domed Bog	MS-7-D	0.29	0.04
	Peat - Flat Bog	MS-7-F	0.27	0.05
	Peat - Horizontal Fen	MS-7-H	0.68	0.10
	Peat - Ribbed Fen	MS-7-R	0.12	0.03
S-8	Peat - Domed Bog	MS-8-D	0.38	0.06
	Peat - Flat Bog	MS-8-F	1.46	0.31
	Peat - Horizontal Fen	MS-8-H	0.18	0.07
	Peat - Ribbed Fen	MS-8-R	0.27	0.09
S-9(1)	Peat - Domed Bog	MS-9(1)-D	0.27	0.17
	Peat - Flat Bog	MS-9(1)-F	0.37	0.05
	Peat - Horizontal Fen	MS-9(1)-H	0.45	0.11
	Peat - Ribbed Fen	MS-9(1)-R	0.22	0.04
S-9(2)	Peat - Domed Bog	MS-9(2)-D	0.42	0.02
	Peat - Flat Bog	MS-9(2)-F	0.57	0.12
	Peat - Horizontal Fen	MS-9(2)-H	0.30	0.08
	Peat - Ribbed Fen	MS-9(2)-R	0.33	0.17
S-13				
S-15				
S-V1	Peat - Domed Bog	MS-V(1)-D	0.18	0.02
	Peat - Ribbed Fen	MS-V(1)-R	0.38	0.09
S-V2	Peat - Domed Bog	MS-V(2)-D	0.24	0.02
	Peat - Ribbed Fen	MS-V(2)-R	0.13	0.03
S-V3	Peat - Domed Bog	MS-V(3)-D	0.49	0.03
	Peat - Ribbed Fen	MS-V(3)-R	0.47	0.04

[redacted] Clusters used for statistical analysis

TWO-WAY ANALYSIS OF VARIANCE TABLES

TOTAL MERCURY

Habitat	Control Mean (S13+S15)	S-1	Sum r.
D. Bog	1.10	0.4	1.495
F. Bog	0.61	0.83	1.440
H. Fen	0.29	0.36	0.645
R. Fen	0.20	0.49	0.690
Sum c.	2.19	2.080	4.270

Total SS	0.632
Treat SS	0.002
Block SS	0.321
Error SS	0.309

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	0.632	-		
Treatment	1	0.002	0.002	**0.01**	10.1
Block	3	0.321	0.107	1.04	9.28
Error	3	0.309	0.103		

Treatment Effect (i.e., difference between Control and S-1) **Not Significant**

METHYL MERCURY

Habitat	Control Mean (S13+S15)	S-1	Sum r.
D. Bog	0.51	0.10	0.608
F. Bog	0.31	0.19	0.503
H. Fen	0.20	0.10	0.297
R. Fen	0.03	0.06	0.082
Sum c.	1.044	0.446	1.490

Total SS	0.178
Treat SS	0.045
Block SS	0.081
Error SS	0.052

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	0.178	-		
Treatment	1	0.045	0.045	**2.58**	10.1
Block	3	0.081	0.027	1.57	9.28
Error	3	0.052	0.017		

Treatment Effect (i.e., difference between Control and S-1) **Not Significant**

TABLE 39b
MUSKEG MONITORING PROGRAM - STATISTICAL ANALYSIS OF CLUSTER PEAT HORIZON MERCURY PORE WATERS
ANNUAL SAMPLING PROGRAM AUGUST / SEPTEMBER 2009 RESULTS - CLUSTER S-2

TOTAL AND METHYL MERCURY PORE WATER CONCENTRATIONS

(ng/L)

Cluster Location	Substrate/Condition	Well Name	Total Mercury (Filtered)	Methyl Mercury (Filtered)
S-1	Peat - Domed Bog	MS-1-D	0.4	0.10
	Peat - Flat Bog	MS-1-F	0.83	0.19
	Peat - Horizontal Fen	MS-1-H	0.36	0.10
	Peat - Ribbed Fen	MS-1-R	0.49	0.06
S-2				
S-7	Peat - Domed Bog	MS-7-D	0.29	0.04
	Peat - Flat Bog	MS-7-F	0.27	0.05
	Peat - Horizontal Fen	MS-7-H	0.68	0.10
	Peat - Ribbed Fen	MS-7-R	0.12	0.03
S-8	Peat - Domed Bog	MS-8-D	0.38	0.06
	Peat - Flat Bog	MS-8-F	1.46	0.31
	Peat - Horizontal Fen	MS-8-H	0.18	0.07
	Peat - Ribbed Fen	MS-8-R	0.27	0.09
S-9(1)	Peat - Domed Bog	MS-9(1)-D	0.27	0.17
	Peat - Flat Bog	MS-9(1)-F	0.37	0.05
	Peat - Horizontal Fen	MS-9(1)-H	0.45	0.11
	Peat - Ribbed Fen	MS-9(1)-R	0.22	0.04
S-9(2)	Peat - Domed Bog	MS-9(2)-D	0.42	0.02
	Peat - Flat Bog	MS-9(2)-F	0.57	0.12
	Peat - Horizontal Fen	MS-9(2)-H	0.30	0.08
	Peat - Ribbed Fen	MS-9(2)-R	0.33	0.17
S-13				
S-15				
S-V1	Peat - Domed Bog	MS-V(1)-D	0.18	0.02
	Peat - Ribbed Fen	MS-V(1)-R	0.38	0.09
S-V2	Peat - Domed Bog	MS-V(2)-D	0.24	0.02
	Peat - Ribbed Fen	MS-V(2)-R	0.13	0.03
S-V3	Peat - Domed Bog	MS-V(3)-D	0.49	0.03
	Peat - Ribbed Fen	MS-V(3)-R	0.47	0.04

Clusters used for statistical analysis

TWO-WAY ANALYSIS OF VARIANCE TABLES

TOTAL MERCURY

Habitat	Control Mean (S13+S15)	S-2	Sum r.
D. Bog	1.10	0.51	1.605
F. Bog	0.61	2.35	2.960
R. Fen	0.20	0.38	0.580
Sum c.	1.905	3.240	5.145

Total SS	3.126
Treat SS	0.297
Block SS	1.425
Error SS	1.404

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	5	3.126	-		
Treatment	1	0.297	0.297	**0.42**	18.5
Block	2	1.425	0.713	1.02	19.0
Error	2	1.404	0.702		

Treatment Effect (i.e., difference between Control and S-2) **Not Significant**

METHYL MERCURY

Habitat	Control Mean (S13+S15)	S-2	Sum r.
D. Bog	0.51	0.04	0.554
F. Bog	0.31	0.07	0.378
R. Fen	0.03	0.09	0.114
Sum c.	0.8461	0.200	1.046

Total SS	0.188
Treat SS	0.070
Block SS	0.049
Error SS	0.070

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	5	0.188	-		
Treatment	1	0.070	0.070	**2.00**	18.5
Block	2	0.049	0.025	0.70	19.0
Error	2	0.070	0.035		

Treatment Effect (i.e., difference between Control and S-2) **Not Significant**

TABLE 39c
MUSKEG MONITORING PROGRAM - STATISTICAL ANALYSIS OF CLUSTER PEAT HORIZON MERCURY PORE WATERS
ANNUAL SAMPLING PROGRAM AUGUST / SEPTEMBER 2009 RESULTS - CLUSTER S-7

TOTAL AND METHYL MERCURY PORE WATER CONCENTRATIONS

(ng/L)

Cluster Location	Substrate/Condition	Well Name	Total Mercury (Filtered)	Methyl Mercury (Filtered)
S-1	Peat - Domed Bog	MS-1-D	0.4	0.10
	Peat - Flat Bog	MS-1-F	0.83	0.19
	Peat - Horizontal Fen	MS-1-H	0.36	0.10
	Peat - Ribbed Fen	MS-1-R	0.49	0.06
S-2	Peat - Domed Bog	MS-2-D	0.51	0.04
	Peat - Flat Bog	MS-2-F	2.35	0.07
	Peat - Ribbed Fen	MS-2-R	0.38	0.09
S-7				
S-8	Peat - Domed Bog	MS-8-D	0.38	0.06
	Peat - Flat Bog	MS-8-F	1.46	0.31
	Peat - Horizontal Fen	MS-8-H	0.18	0.07
	Peat - Ribbed Fen	MS-8-R	0.27	0.09
S-9(1)	Peat - Domed Bog	MS-9(1)-D	0.27	0.17
	Peat - Flat Bog	MS-9(1)-F	0.37	0.05
	Peat - Horizontal Fen	MS-9(1)-H	0.45	0.11
	Peat - Ribbed Fen	MS-9(1)-R	0.22	0.04
S-9(2)	Peat - Domed Bog	MS-9(2)-D	0.42	0.02
	Peat - Flat Bog	MS-9(2)-F	0.57	0.12
	Peat - Horizontal Fen	MS-9(2)-H	0.30	0.08
	Peat - Ribbed Fen	MS-9(2)-R	0.33	0.17
S-13				
S-15				
S-V1	Peat - Domed Bog	MS-V(1)-D	0.18	0.02
	Peat - Ribbed Fen	MS-V(1)-R	0.38	0.09
S-V2	Peat - Domed Bog	MS-V(2)-D	0.24	0.02
	Peat - Ribbed Fen	MS-V(2)-R	0.13	0.03
S-V3	Peat - Domed Bog	MS-V(3)-D	0.49	0.03
	Peat - Ribbed Fen	MS-V(3)-R	0.47	0.04

[redacted] Clusters used for statistical analysis

TWO-WAY ANALYSIS OF VARIANCE TABLES

TOTAL MERCURY

Habitat	Control Mean (S13+S15)	S-7	Sum r.
D. Bog	1.10	0.29	1.385
F. Bog	0.61	0.27	0.880
H. Fen	0.29	0.68	0.965
R. Fen	0.20	0.12	0.320
Sum c.	2.19	1.360	3.550

Total SS	0.751
Treat SS	0.086
Block SS	0.288
Error SS	0.377

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	0.751	-		
Treatment	1	0.086	0.086	**0.69**	10.1
Block	3	0.288	0.096	**0.76**	9.28
Error	3	0.377	0.126		

Treatment Effect (i.e., difference between Control and S-7) **Not Significant**

METHYL MERCURY

Habitat	Control Mean (S13+S15)	S-7	Sum r.
D. Bog	0.51	0.04	0.548
F. Bog	0.31	0.05	0.363
H. Fen	0.20	0.10	0.294
R. Fen	0.03	0.03	0.061
Sum c.	1.044	0.221	1.265

Total SS	0.210
Treat SS	0.085
Block SS	0.061
Error SS	0.065

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	0.210	-		
Treatment	1	0.085	0.085	**3.92**	10.1
Block	3	0.061	0.020	**0.94**	9.28
Error	3	0.065	0.022		

Treatment Effect (i.e., difference between Control and S-7) **Not Significant**

TABLE 39d
MUSKEG MONITORING PROGRAM - STATISTICAL ANALYSIS OF CLUSTER PEAT HORIZON MERCURY PORE WATERS
ANNUAL SAMPLING PROGRAM AUGUST / SEPTEMBER 2009 RESULTS - CLUSTER S-8

TOTAL AND METHYL MERCURY PORE WATER CONCENTRATIONS

(ng/L)

Cluster Location	Substrate/Condition	Well Name	Total Mercury (Filtered)	Methyl Mercury (Filtered)
S-1	Peat - Domed Bog	MS-1-D	0.4	0.10
	Peat - Flat Bog	MS-1-F	0.83	0.19
	Peat - Horizontal Fen	MS-1-H	0.36	0.10
	Peat - Ribbed Fen	MS-1-R	0.49	0.06
S-2	Peat - Domed Bog	MS-2-D	0.51	0.04
	Peat - Flat Bog	MS-2-F	2.35	0.07
	Peat - Ribbed Fen	MS-2-R	0.38	0.09
S-7	Peat - Domed Bog	MS-7-D	0.29	0.04
	Peat - Flat Bog	MS-7-F	0.27	0.05
	Peat - Horizontal Fen	MS-7-H	0.68	0.10
	Peat - Ribbed Fen	MS-7-R	0.12	0.03
S-8				
S-9(1)	Peat - Domed Bog	MS-9(1)-D	0.27	0.17
	Peat - Flat Bog	MS-9(1)-F	0.37	0.05
	Peat - Horizontal Fen	MS-9(1)-H	0.45	0.11
	Peat - Ribbed Fen	MS-9(1)-R	0.22	0.04
S-9(2)	Peat - Domed Bog	MS-9(2)-D	0.42	0.02
	Peat - Flat Bog	MS-9(2)-F	0.57	0.12
	Peat - Horizontal Fen	MS-9(2)-H	0.30	0.08
	Peat - Ribbed Fen	MS-9(2)-R	0.33	0.17
S-13				
S-15				
S-V1	Peat - Domed Bog	MS-V(1)-D	0.18	0.02
	Peat - Ribbed Fen	MS-V(1)-R	0.38	0.09
S-V2	Peat - Domed Bog	MS-V(2)-D	0.24	0.02
	Peat - Ribbed Fen	MS-V(2)-R	0.13	0.03
S-V3	Peat - Domed Bog	MS-V(3)-D	0.49	0.03
	Peat - Ribbed Fen	MS-V(3)-R	0.47	0.04

Clusters used for statistical analysis

TWO-WAY ANALYSIS OF VARIANCE TABLES

TOTAL MERCURY

Habitat	Control Mean (S13+S15)	S-8	Sum r.
D. Bog	1.10	0.38	1.475
F. Bog	0.61	1.46	2.070
H. Fen	0.29	0.18	0.465
R. Fen	0.20	0.27	0.470
Sum c.	2.19	2.290	4.480

Total SS	1.565
Treat SS	0.001
Block SS	0.940
Error SS	0.624

ANOVA Table

Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	1.565	-		
Treatment	1	0.001	0.001	**0.01**	10.1
Block	3	0.940	0.313	1.51	9.28
Error	3	0.624	0.208		

Treatment Effect (i.e., difference between Control and S-8) **Not Significant**

METHYL MERCURY

Habitat	Control Mean (S13+S15)	S-8	Sum r.
D. Bog	0.51	0.06	0.574
F. Bog	0.31	0.31	0.616
H. Fen	0.20	0.07	0.269
R. Fen	0.03	0.09	0.117
Sum c.	1.044	0.531	1.575

Total SS	0.197
Treat SS	0.033
Block SS	0.087
Error SS	0.076

ANOVA Table

Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	0.197	-		
Treatment	1	0.033	0.033	**1.29**	10.1
Block	3	0.087	0.029	1.14	9.28
Error	3	0.076	0.025		

Treatment Effect (i.e., difference between Control and S-8) **Not Significant**

TABLE 39e
MUSKEG MONITORING PROGRAM - STATISTICAL ANALYSIS OF CLUSTER PEAT HORIZON MERCURY PORE WATERS
ANNUAL SAMPLING PROGRAM AUGUST / SEPTEMBER 2009 RESULTS - CLUSTER S-9(1)

TOTAL AND METHYL MERCURY PORE WATER CONCENTRATIONS

(ng/L)

Cluster Location	Substrate/Condition	Well Name	Total Mercury (Filtered)	Methyl Mercury (Filtered)
S-1	Peat - Domed Bog	MS-1-D	0.4	0.10
	Peat - Flat Bog	MS-1-F	0.83	0.19
	Peat - Horizontal Fen	MS-1-H	0.36	0.10
	Peat - Ribbed Fen	MS-1-R	0.49	0.06
S-2	Peat - Domed Bog	MS-2-D	0.51	0.04
	Peat - Flat Bog	MS-2-F	2.35	0.07
	Peat - Ribbed Fen	MS-2-R	0.38	0.09
S-7	Peat - Domed Bog	MS-7-D	0.29	0.04
	Peat - Flat Bog	MS-7-F	0.27	0.05
	Peat - Horizontal Fen	MS-7-H	0.68	0.10
	Peat - Ribbed Fen	MS-7-R	0.12	0.03
S-8	Peat - Domed Bog	MS-8-D	0.38	0.06
	Peat - Flat Bog	MS-8-F	1.46	0.31
	Peat - Horizontal Fen	MS-8-H	0.18	0.07
	Peat - Ribbed Fen	MS-8-R	0.27	0.09
S-9(1)				
S-9(2)	Peat - Domed Bog	MS-9(2)-D	0.42	0.02
	Peat - Flat Bog	MS-9(2)-F	0.57	0.12
	Peat - Horizontal Fen	MS-9(2)-H	0.30	0.08
	Peat - Ribbed Fen	MS-9(2)-R	0.33	0.17
S-13				
S-15				
S-V1	Peat - Domed Bog	MS-V(1)-D	0.18	0.02
	Peat - Ribbed Fen	MS-V(1)-R	0.38	0.09
S-V2	Peat - Domed Bog	MS-V(2)-D	0.24	0.02
	Peat - Ribbed Fen	MS-V(2)-R	0.13	0.03
S-V3	Peat - Domed Bog	MS-V(3)-D	0.49	0.03
	Peat - Ribbed Fen	MS-V(3)-R	0.47	0.04

Clusters used for statistical analysis

TWO-WAY ANALYSIS OF VARIANCE TABLES

TOTAL MERCURY

Habitat	Control Mean (S13+S15)	S-9(1)	Sum r.
D. Bog	1.10	0.27	1.365
F. Bog	0.61	0.37	0.980
H. Fen	0.29	0.45	0.735
R. Fen	0.20	0.22	0.420
Sum c.	2.19	1.310	3.500

Total SS	0.622
Treat SS	0.097
Block SS	0.239
Error SS	0.286

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	0.622	-		
Treatment	1	0.097	0.097	**1.01**	10.1
Block	3	0.239	0.080	**0.83**	9.28
Error	3	0.286	0.095		

Treatment Effect (i.e., difference between Control and S-9[1]) **Not Significant**

METHYL MERCURY

Habitat	Control Mean (S13+S15)	S-9(1)	Sum r.
D. Bog	0.51	0.17	0.676
F. Bog	0.31	0.05	0.360
H. Fen	0.20	0.11	0.311
R. Fen	0.03	0.04	0.065
Sum c.	1.044	0.367	1.411

Total SS	0.191
Treat SS	0.057
Block SS	0.094
Error SS	0.039

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	0.191	-		
Treatment	1	0.057	0.057	**4.38**	10.1
Block	3	0.094	0.031	**2.41**	9.28
Error	3	0.039	0.013		

Treatment Effect (i.e., difference between Control and S-9[1]) **Not Significant**

TABLE 39f
MUSKEG MONITORING PROGRAM - STATISTICAL ANALYSIS OF CLUSTER PEAT HORIZON MERCURY PORE WATERS
ANNUAL SAMPLING PROGRAM AUGUST / SEPTEMBER 2009 RESULTS - CLUSTER S-9(2)

TOTAL AND METHYL MERCURY PORE WATER CONCENTRATIONS
(ng/L)

Cluster Location	Substrate/Condition	Well Name	Total Mercury (Filtered)	Methyl Mercury (Filtered)
S-1	Peat - Domed Bog	MS-1-D	0.4	0.10
	Peat - Flat Bog	MS-1-F	0.83	0.19
	Peat - Horizontal Fen	MS-1-H	0.36	0.10
	Peat - Ribbed Fen	MS-1-R	0.49	0.06
S-2	Peat - Domed Bog	MS-2-D	0.51	0.04
	Peat - Flat Bog	MS-2-F	2.35	0.07
	Peat - Ribbed Fen	MS-2-R	0.38	0.09
S-7	Peat - Domed Bog	MS-7-D	0.29	0.04
	Peat - Flat Bog	MS-7-F	0.27	0.05
	Peat - Horizontal Fen	MS-7-H	0.68	0.10
	Peat - Ribbed Fen	MS-7-R	0.12	0.03
S-8	Peat - Domed Bog	MS-8-D	0.38	0.06
	Peat - Flat Bog	MS-8-F	1.46	0.31
	Peat - Horizontal Fen	MS-8-H	0.18	0.07
	Peat - Ribbed Fen	MS-8-R	0.27	0.09
S-9(1)	Peat - Domed Bog	MS-9(1)-D	0.27	0.17
	Peat - Flat Bog	MS-9(1)-F	0.37	0.05
	Peat - Horizontal Fen	MS-9(1)-H	0.45	0.11
	Peat - Ribbed Fen	MS-9(1)-R	0.22	0.04
S-9(2)				
S-13				
S-15				
S-V1	Peat - Domed Bog	MS-V(1)-D	0.18	0.02
	Peat - Ribbed Fen	MS-V(1)-R	0.38	0.09
S-V2	Peat - Domed Bog	MS-V(2)-D	0.24	0.02
	Peat - Ribbed Fen	MS-V(2)-R	0.13	0.03
S-V3	Peat - Domed Bog	MS-V(3)-D	0.49	0.03
	Peat - Ribbed Fen	MS-V(3)-R	0.47	0.04

[redacted] Clusters used for statistical analysis

TWO-WAY ANALYSIS OF VARIANCE TABLES

TOTAL MERCURY

Habitat	Control Mean (S13+S15)	S-9(2)	Sum r.
D. Bog	1.10	0.42	1.515
F. Bog	0.61	0.57	1.180
H. Fen	0.29	0.30	0.585
R. Fen	0.20	0.33	0.530
Sum c.	2.19	1.620	3.810

Total SS	0.578
Treat SS	0.041
Block SS	0.341
Error SS	0.197

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	0.578	-		
Treatment	1	0.041	0.041	**0.62**	10.1
Block	3	0.341	0.114	1.73	9.28
Error	3	0.197	0.066		

Treatment Effect (i.e., difference between Control and S-9[2]) **Not Significant**

METHYL MERCURY

Habitat	Control Mean (S13+S15)	S-9(2)	Sum r.
D. Bog	0.51	0.02	0.535
F. Bog	0.31	0.12	0.430
H. Fen	0.20	0.08	0.277
R. Fen	0.03	0.17	0.196
Sum c.	1.044	0.394	1.438

Total SS	0.187
Treat SS	0.053
Block SS	0.035
Error SS	0.100

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	0.187	-		
Treatment	1	0.053	0.053	**1.59**	10.1
Block	3	0.035	0.012	0.35	9.28
Error	3	0.100	0.033		

Treatment Effect (i.e., difference between Control and S-9[2]) **Not Significant**

TABLE 39g
MUSKEG MONITORING PROGRAM - STATISTICAL ANALYSIS OF CLUSTER PEAT HORIZON MERCURY PORE WATERS
ANNUAL SAMPLING PROGRAM AUGUST / SEPTEMBER 2009 RESULTS - CLUSTER S-V SERIES

TOTAL AND METHYL MERCURY PORE WATER CONCENTRATIONS
(ng/L)

Cluster Location	Substrate/Condition	Well Name	Total Mercury (Filtered)	Methyl Mercury (Filtered)
S-1	Peat - Domed Bog	MS-1-D	0.4	0.10
	Peat - Flat Bog	MS-1-F	0.83	0.19
	Peat - Horizontal Fen	MS-1-H	0.36	0.10
	Peat - Ribbed Fen	MS-1-R	0.49	0.06
S-2	Peat - Domed Bog	MS-2-D	0.51	0.04
	Peat - Flat Bog	MS-2-F	2.35	0.07
	Peat - Ribbed Fen	MS-2-R	0.38	0.09
S-7	Peat - Domed Bog	MS-7-D	0.29	0.04
	Peat - Flat Bog	MS-7-F	0.27	0.05
	Peat - Horizontal Fen	MS-7-H	0.68	0.10
	Peat - Ribbed Fen	MS-7-R	0.12	0.03
S-8	Peat - Domed Bog	MS-8-D	0.38	0.06
	Peat - Flat Bog	MS-8-F	1.46	0.31
	Peat - Horizontal Fen	MS-8-H	0.18	0.07
	Peat - Ribbed Fen	MS-8-R	0.27	0.09
S-9(1)	Peat - Domed Bog	MS-9(1)-D	0.27	0.17
	Peat - Flat Bog	MS-9(1)-F	0.37	0.05
	Peat - Horizontal Fen	MS-9(1)-H	0.45	0.11
	Peat - Ribbed Fen	MS-9(1)-R	0.22	0.04
S-9(2)	Peat - Domed Bog	MS-9(2)-D	0.42	0.02
	Peat - Flat Bog	MS-9(2)-F	0.57	0.12
	Peat - Horizontal Fen	MS-9(2)-H	0.30	0.08
	Peat - Ribbed Fen	MS-9(2)-R	0.33	0.17
S-13	Peat - Flat Bog	MS-13-F	0.92	0.45
	Peat - Horizontal Fen	MS-13-H	0.35	0.29
S-15	Peat - Flat Bog	MS-15-F	0.30	0.17
	Peat - Horizontal Fen	MS-15-H	0.22	0.10
S-V1				
S-V2				
S-V3				

[redacted] Clusters used for statistical analysis

TWO-WAY ANALYSIS OF VARIANCE TABLES

TOTAL MERCURY

Habitat	Control Mean (S13+S15)	S-V1	S-V2	S-V3	Sum r.
D. Bog	1.10	0.18	0.24	0.49	2.01
R. Fen	0.20	0.38	0.13	0.47	1.18
Sum c.	1.30	0.56	0.37	0.96	3.19

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	0.683	-		
Treatment	3	0.257	0.086	**0.75**	**9.28**
Block	1	0.085	0.085	0.75	10.1
Error	3	0.342	0.114		

Total SS	0.683
Treat SS	0.257
Block SS	0.085
Error SS	0.342

Treatment Effect (i.e., difference between Control and S-9[2]) **Not Significant**

METHYL MERCURY

Habitat	Control Mean (S13+S15)	S-V1	S-V2	S-V3	Sum r.
D. Bog	0.51	0.02	0.02	0.03	0.58
R. Fen	0.03	0.09	0.03	0.04	0.19
Sum c.	0.54	0.11	0.05	0.07	0.77

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	7	0.198	-		
Treatment	3	0.080	0.027	**0.80**	**9.28**
Block	1	0.019	0.019	0.57	10.1
Error	3	0.100	0.033		

Total SS	0.198
Treat SS	0.080
Block SS	0.019
Error SS	0.100

Treatment Effect (i.e., difference between Control and S-9[2]) **Not Significant**

TABLE 40a
GRANNY CREEK - STATISTICAL ANALYSIS - TOTAL MERCURY - 2009
(filtered samples, concentrations in ng/L)

NORTH GRANNY CREEK DATA AND TWO-WAY ANALYSIS OF VARIANCE TABLES

Date	US NWF (G1)	DS NEF (G3)	Sum r.
Jan	1.33	1.27	2.6
Feb	1.15	1.05	2.2
Mar	1.15	1.40	2.55
Apr	1.56	1.09	2.65
May	2.43	2.12	4.55
Jun	3.24	3.16	6.4
Jul	2.57	2.37	4.94
Aug	1.66	1.69	3.35
Sep	1.54	1.63	3.17
Oct	1.45	1.65	3.1
Nov	1.51	1.51	3.02
Dec	0.97	0.99	1.96
Sum c.	20.56	19.93	40.49

Total SS	9.452
Treat SS	0.017
Block SS	9.207
Error SS	0.228

ANOVA Table

Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	23	9.452	-		
Treatment	1	0.017	0.017	**0.80**	**4.84**
Block	11	9.207	0.837	40.40	2.98
Error	11	0.228	0.021		

Treatment Effect (i.e., difference between US and DS) **Not Significant**

Notes: US NWF - Upstream Northwest Fen; DS NEF - Downstream Northeast Fen
r. - rows; c. - columns

SOUTH GRANNY CREEK DATA AND TWO-WAY ANALYSIS OF VARIANCE TABLES

Date	US SWF (G5)	DS SWF (G6)	Sum r.
Jan	2.05	1.34	3.39
Feb	1.68	1.19	2.87
Mar	1.75	1.22	2.97
Apr	1.34	1.78	3.12
May	1.98	2.19	4.17
Jun	2.75	2.71	5.46
Jul	2.20	1.96	4.16
Aug	1.66	1.80	3.46
Sep	1.39	1.39	2.78
Oct	1.01	1.08	2.09
Nov	2.01	0.80	2.81
Dec	0.95	0.75	1.7
Sum c.	20.77	18.21	38.98

Total SS	6.938
Treat SS	0.273
Block SS	5.512
Error SS	1.152

ANOVA Table

Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	23	6.938	-		
Treatment	1	0.273	0.273	**2.61**	**4.84**
Block	11	5.512	0.501	4.78	2.98
Error	11	1.152	0.105		

Treatment Effect (i.e., difference between US and DS) **Not Significant**

Notes: US SWF - Upstream Southwest Fen; DS SWF - Downstream Southwest Fen
r. - rows; c. - columns

TABLE 40b
GRANNY CREEK - STATISTICAL ANALYSIS - METHYL MERCURY - 2009
(filtered samples, concentrations in ng/L)

NORTH GRANNY CREEK DATA AND TWO-WAY ANALYSIS OF VARIANCE TABLES

Habitat	US NWF (G1)	DS NEF (G3)	US CONF (G4)	Sum r.
Jan	0.03	0.06	0.06	0.15
Apr	0.02	0.01	0.03	0.06
Jul	0.06	0.06	0.08	0.2
Oct	0.04	0.04	0.11	0.19
Sum c.	0.15	0.17	0.28	0.6

The April value for US Conf is estimated

Total SS	0.008
Treat SS	0.002
Block SS	0.004
Error SS	0.002

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	11	0.008	-		
Treatment	2	0.002	0.001	**3.90**	**5.14**
Block	3	0.004	0.001	4.32	4.76
Error	6	0.002	0.000		

Treatment Effect (i.e., difference between US and DS) **Not Significant**

Notes: US NWF - Upstream Northwest Fen; DS NEF - Downstream Northeast Fen; US CONF - Upstream Confluence
r. - rows; c. - columns

SOUTH GRANNY CREEK DATA AND TWO-WAY ANALYSIS OF VARIANCE TABLES

Habitat	US SWF (G5)	DS SWF (G6)	US CONF (G7)	Sum r.
Jan / Feb	0.06	0.04	0.04	0.14
Apr	0.02	0.02	0.02	0.06
Jul	0.04	0.05	0.05	0.14
Oct	0.05	0.02	0.16	0.23
Sum c.	0.17	0.13	0.27	0.57

Total SS	0.016
Treat SS	0.003
Block SS	0.005
Error SS	0.009

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	11	0.016	-		
Treatment	2	0.003	0.001	**0.91**	**5.14**
Block	3	0.005	0.002	1.12	4.76
Error	6	0.009	0.001		

Treatment Effect (i.e., difference between US and DS) **Not Significant**

Notes: US SWF - Upstream Southwest Fen; DS SWF - Downstream Southwest Fen; US CONF - Upstream Confluence
r. - rows; c. - columns

TABLE 40c
NAYSHKOOTAYAOW RIVER - STATISTICAL ANALYSIS - MERCURY - 2009
(filtered samples, concentrations in ng/L)

TOTAL MERCURY DATA AND TWO-WAY ANALYSIS OF VARIANCE TABLES

Habitat	Nash R. US (N1)	Nash R. M (N2)	Nash R. DS (N3)	Sum r.
Jan	0.96	0.99	1.99	3.94
Apr/May	2.40	0.78	0.76	3.94
Jul	1.49	1.43	1.50	4.42
Oct	0.80	0.68	0.86	2.34
Sum c.	5.65	3.88	5.11	14.64

Total SS	3.304
Treat SS	0.411
Block SS	0.826
Error SS	2.067

ANOVA Table

Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	11	3.304	-		
Treatment	2	0.411	0.206	**0.60**	**5.14**
Block	3	0.826	0.275	0.80	4.76
Error	6	2.067	0.344		

Treatment Effect (i.e., difference between US and DS) **Not Significant**

Notes: US - Upstream; M - Middle; DS - Downstream
r. - rows; c. - columns

METHYL MERCURY DATA AND TWO-WAY ANALYSIS OF VARIANCE TABLES

Habitat	Nash R. US (N1)	Nash R. M (N2)	Nash R. DS (N3)	Sum r.
Jan	0.03	0.03	0.03	0.09
Apr/May	0.01	0.03	0.02	0.06
Jul	0.05	0.05	0.06	0.16
Oct	0.03	0.02	0.03	0.08
Sum c.	0.12	0.13	0.14	0.39

Total SS	0.002
Treat SS	0.000
Block SS	0.002
Error SS	0.000

ANOVA Table

Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	11	0.002	-		
Treatment	2	0.000	0.000	**0.53**	**5.14**
Block	3	0.002	0.001	13.35	4.76
Error	6	0.000	0.000		

Treatment Effect (i.e., difference between US and DS) **Not Significant**

Notes: US - Upstream; M - Middle; DS - Downstream
r. - rows; c. - columns

TABLE 40d
ATTAWAPISKAT RIVER - STATISTICAL ANALYSIS - MERCURY - 2009
(filtered samples, concentrations in ng/L)

TOTAL MERCURY DATA AND TWO-WAY ANALYSIS OF VARIANCE TABLES

Habitat	Att R. (A-1)	Att R. (A-2)	Att R. (A-3)	Att R. (A-4)	Sum r.
Jan	1.14	1.58	1.49	1.17	5.38
Apr	1.08	1.11	1.36	1.06	4.61
Jul	2.36	1.82	2.03	2.34	8.55
Oct	1.05	1.05	1.02	0.94	4.06
Sum c.	5.63	5.56	5.90	5.51	22.6

Total SS	3.442
Treat SS	0.023
Block SS	3.023
Error SS	0.396

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	15	3.442	-		
Treatment	3	0.023	0.008	**0.17**	**3.86**
Block	3	3.023	1.008	22.91	3.86
Error	9	0.396	0.044		

Treatment Effect (i.e., difference between US and DS) **Not Significant**

Notes: US - Upstream; DN - Downstream
r. - rows; c. - columns

METHYL MERCURY DATA AND TWO-WAY ANALYSIS OF VARIANCE TABLES

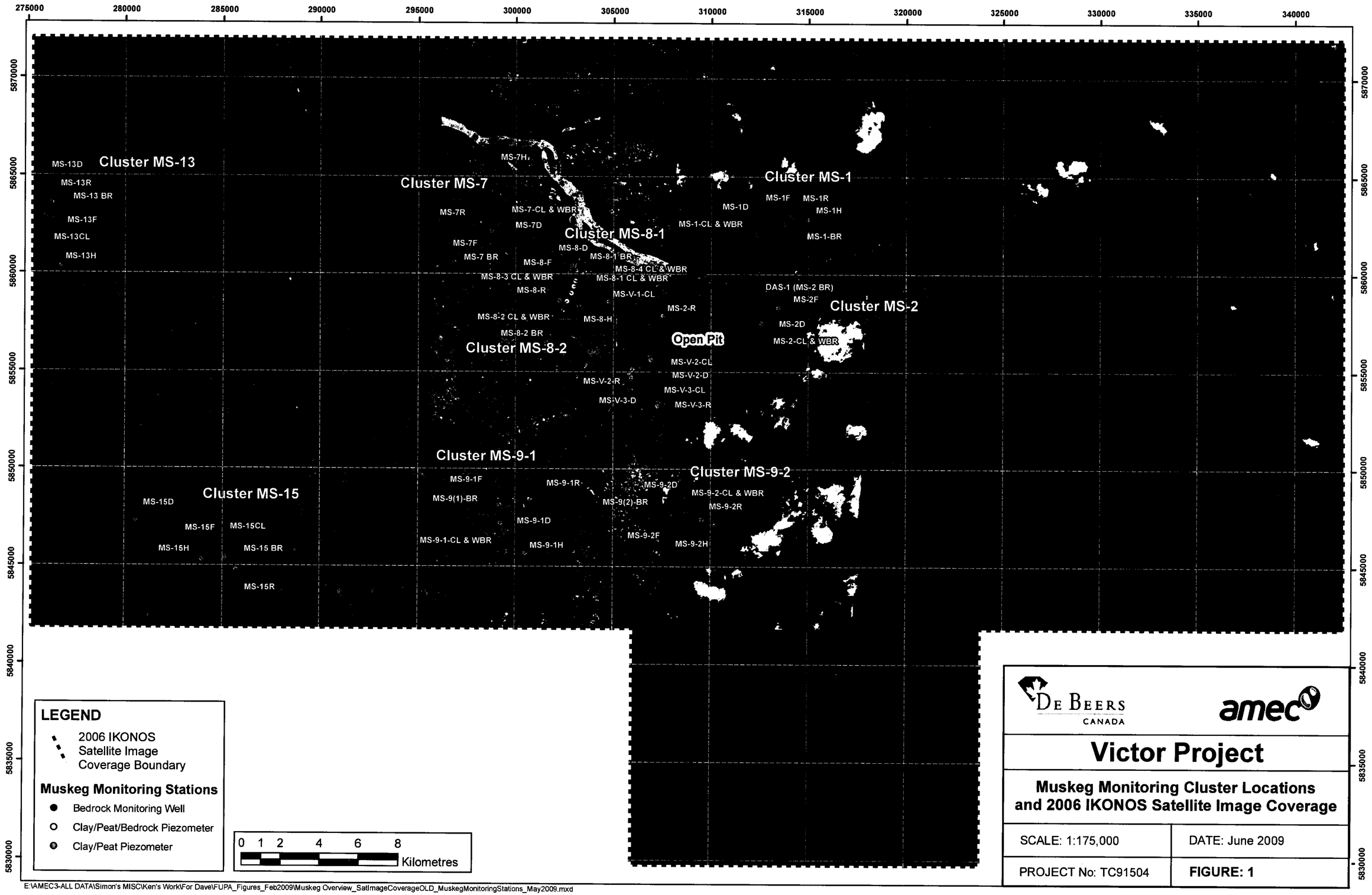
Habitat	Att R. (A-1)	Att R. (A-2)	Att R. (A-3)	Att R. (A-4)	Sum r.
Jan	0.02	0.02	0.02	0.02	0.08
Apr	0.02	0.02	0.03	0.01	0.08
Jul	0.15	0.03	0.02	0.03	0.23
Oct	0.04	0.05	0.06	0.07	0.22
Sum c.	0.23	0.12	0.13	0.13	0.61

Total SS	0.017
Treat SS	0.002
Block SS	0.005
Error SS	0.010

ANOVA Table					
Source V.	d.f.	SS	MS	F_{cal}	F_{tab} 0.05
Total	15	0.017	-		
Treatment	3	0.002	0.001	**0.60**	**3.86**
Block	3	0.005	0.002	1.56	3.86
Error	9	0.010	0.001		

Treatment Effect (i.e., difference between US and DS) **Not Significant**

Notes: US - Upstream;DN - Downstream
r. - rows; c. - columns


275000
280000
285000
290000
295000
300000
305000
310000
315000
320000
325000
330000
335000
340000
5870000
5865000
5860000
5855000
5850000
5845000
5840000
5835000
5830000
Cluster MS-13
MS-13D
MS-13R
MS-13 BR
MS-13F
MS-13CL
MS-13H
Cluster MS-7
MS-7H
MS-7R
MS-7-CL & WBR
MS-7D
MS-7F
MS-7 BR
Cluster MS-8-1
MS-8-D
MS-8-1 BR
MS-8-F
MS-8-4 CL & WBR
MS-8-3 CL & WBR
MS-8-1 CL & WBR
MS-8-R
MS-V-1-CL
MS-8-2 CL & WBR
MS-8-H
MS-8-2 BR
Cluster MS-8-2
Cluster MS-1
MS-1D
MS-1F
MS-1R
MS-1H
MS-1-CL & WBR
MS-1-BR
DAS-1 (MS-2 BR)
MS-2F
Cluster MS-2
MS-2-R
MS-2D
MS-2-CL & WBR
Open Pit
MS-V-2-CL
MS-V-2-D
MS-V-2-R
MS-V-3-CL
MS-V-3-D
MS-V-3-R
Cluster MS-9-1
MS-9-1F
MS-9-1R
MS-9-2D
MS-9-2-CL & WBR
MS-9-2R
Cluster MS-9-2
MS-9(1)-BR
MS-9(2)-BR
MS-9-1D
MS-9-1-CL & WBR
MS-9-1H
MS-9-2F
MS-9-2H
Cluster MS-15
MS-15D
MS-15F
MS-15CL
MS-15H
MS-15 BR
MS-15R
LEGEND
2006 IKONOS Satellite Image Coverage Boundary
Muskeg Monitoring Stations
Bedrock Monitoring Well
Clay/Peat/Bedrock Piezometer
Clay/Peat Piezometer
0 1 2 4 6 8
Kilometres
De Beers CANADA
amec
Victor Project
Muskeg Monitoring Cluster Locations and 2006 IKONOS Satellite Image Coverage
SCALE: 1:175,000
DATE: June 2009
PROJECT No: TC91504
FIGURE: 1
E:\AMEC3-ALL DATA\Simon's MISC\Ken's Work\For Dave\FUPA_Figures_Feb2009\Muskeg Overview_SatImageCoverageOLD_MuskegMonitoringStations_May2009.mxd

298000 300000 302000 304000 306000 308000 310000 312000 314000

5866000 5864000 5862000 5860000 5858000 5856000 5854000 5852000 5850000 5848000

MS-7H
MS-7-R
MS-7D
MS-7-CL & WBR
MS-7F
MS-7 BR
V-05-437
B1-07-008C
MS-8-D
HCI-05-4
MS-8-1 BR
MS-8-4 CL & WBR
MS-8-F
MS-8-1 CL & WBR
MS-8-3 CL & WBR
MS-8-R
NQ-165NW
NGC Well
MS-V-1-CL
MS-V-1-D
V-03-334E
MS-8-2 CL & WBR
MS-8-H
HCI-03-01
MS-8-2 BR
NQ-500E
NQ-165E
NQ-500NW
CQ-N1
CQ-250N
HCI-05-13
CQ-100N
V-03-300E
CQ-165N
CQ-SE-1
HCI-05-12
DW-1
CQ-100SE
CQ-165SE
HCI-03-02
CQ-250SE
CQ-SE-2
HCI-03-03
MS-V-2-R
SQ-WL-4(M, C, BR)
HCI-05-9
V-03-321E
SGC
SQ-WL-2(M, C, BR)
HCI-05-8
HCI-05-5
MS-9(1)-R
MS-9-1F
MS-9(1)-BR
MS-9-1-CL & WBR
MS-9-1D

Attawapiskat River

Nayshkootayaow River

DAS-2
MS-1-R
MS-1-CL & WBR
MS-1D
HCI-05-3
HCI-05-2
HCI-03-12
V-05-434
MS-2-R
HCI-05-1a
HCI-05-1c
DAS-1 (MS-2 BR)
MS-2F
MS-2-CL & WBR
MS-2D
MS-V-2-CL
MS-V-2-D
HCI-03-04
W-07-008C
HCI-03-10
HCI-03-8
HCI-03-6
MS-V-3-CL
X-07-014C
HCI-05-20
MS-V-3-R
Y-07-007C
MS-9-2D
MS-9-2-CL & WBR
MS-9-2F
MS-9(2)-R
MS-9-2H
MS-9(2)-BR
HCI-05-7

E:\AMEC3-ALL DATA\Simon's MISC\Ken's Work\For Dave\FUPA_Figures_2010\Fig2_UpperBR_Drawdown_and_RibbedFenStations.mxd

LEGEND

Monitoring Locations

- Pumping Wells
- Bedrock Monitoring Well
- Clay/Peat Piezometer
- Clay/Peat/Bedrock Piezometer
- Ribbed Fen Station (Clay/Peat Piezometer)

10 Drawdown in Upper Bedrock (m)

0 0.5 1 2 3 4 5
Kilometres

NOTE:
- IKONOS Satellite imagery scene date is August 27, 2008

Datum: NAD83
Projection: UTM Zone 17N

N W E S

De Beers CANADA

amec

VICTOR MINE

Interpreted Drawdown Contours (m) in Upper Bedrock Aquifer (July 15, 2009 data)

SCALE: 1:90,000	DATE: June 2010
PROJECT No: TC91504	FIGURE: 2

000451

300000 305000 310000 315000 320000 325000

5865000 5860000 5855000 5850000

A-1 A-2 A-3 A-4 N-1 N-2 N-3

0 2 4 8 Kilometres

Attawapiskat River

North Granny Creek

South Granny Creek

Nayshkootayaow River

S-1 S-2 S-3 S-4 G-1 G-2 G-3 G-4 G-5 G-6 G-7 G-8

Legend

Surface Water Monitoring Station Location

- Attawapiskat River
- Nayshkootayaow River
- Granny Creek
- Fens

STATION ID	LOCATION	DESCRIPTION	Hg SAMPLING FREQUENCY
	Attawapiskat River	upsteam #2	Quarterly
	Attawapiskat River	upstream of site	Quarterly
	Attawapiskat River	downstream of site	Quarterly
	Attawapiskat River	downstream of Nayshkootayaow River	Quarterly
	Nayshkootayaow River	upstream of site	Quarterly
	Nayshkootayaow River	downstream of site (US of Granny Creek)	Quarterly
	Nayshkootayaow River	upstream of Attawapiskat River	Quarterly
	North Granny Creek	N. Granny Creek-upstream NW fen	Quarterly
	North Granny Creek	N. Granny Creek-downstream NW fen	Monthly, Quarterly
	North Granny Creek	N. Granny Creek-downstream NE fen	Monthly, Quarterly
	North Granny Creek	N. Granny Creek-downstream	Quarterly
	South Granny Creek	S. Granny Creek-upstream SW fen	Monthly, Quarterly
	South Granny Creek	S. Granny Creek-downstream SW fen	Monthly, Quarterly
	South Granny Creek	S. Granny Creek-downstream	Quarterly
	Granny Creek Confluence	Granny Creek confluence	Quarterly
S-1	Southwest Fen	Southwest fen	Monthly, Quarterly
S-2	Northeast Fen	Northeast fen	Monthly, Quarterly
S-3	Southeast Fen	Southeast fen	Quarterly
S-4	Northwest Control Fen	Northwest control fen	Quarterly

De Beers Canada

amec

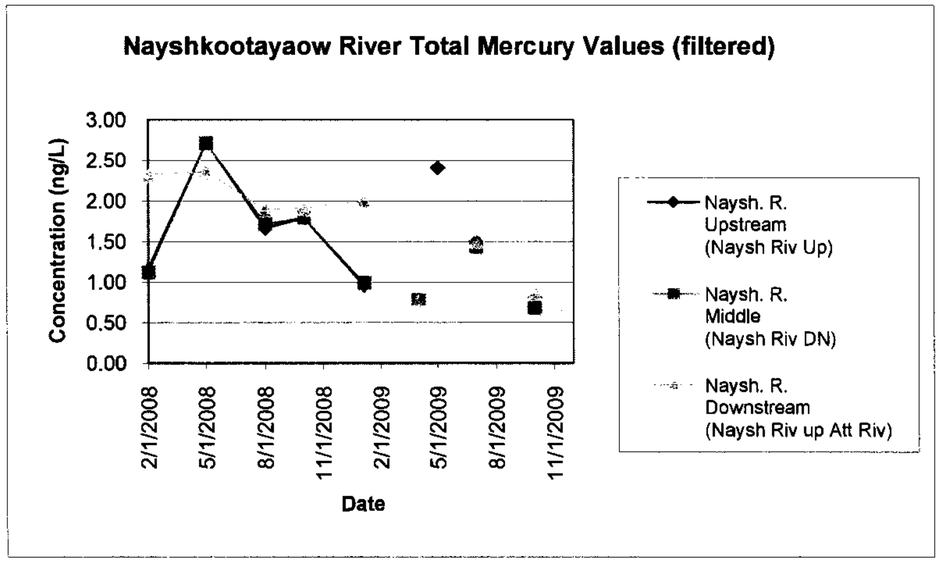
VICTOR PROJECT

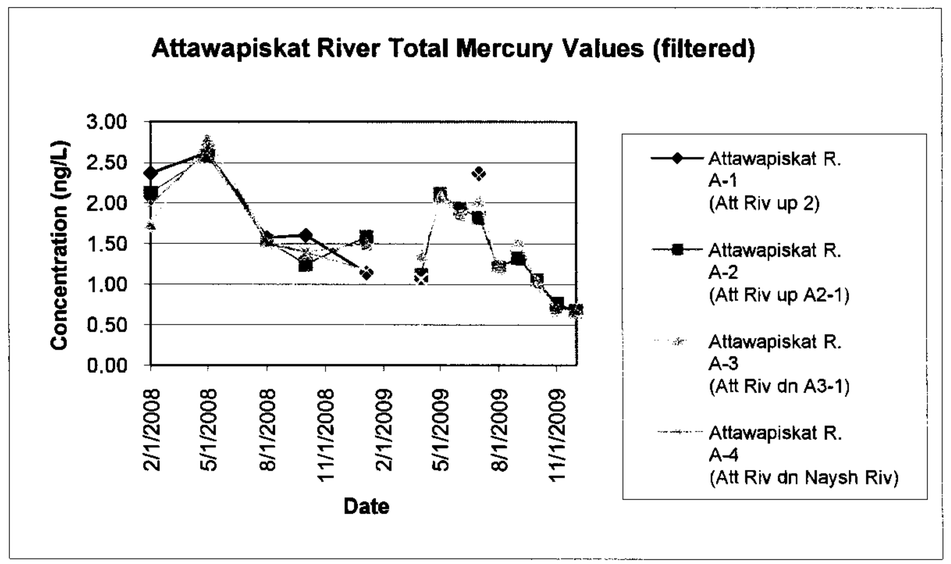
Surface Water Monitoring Stations

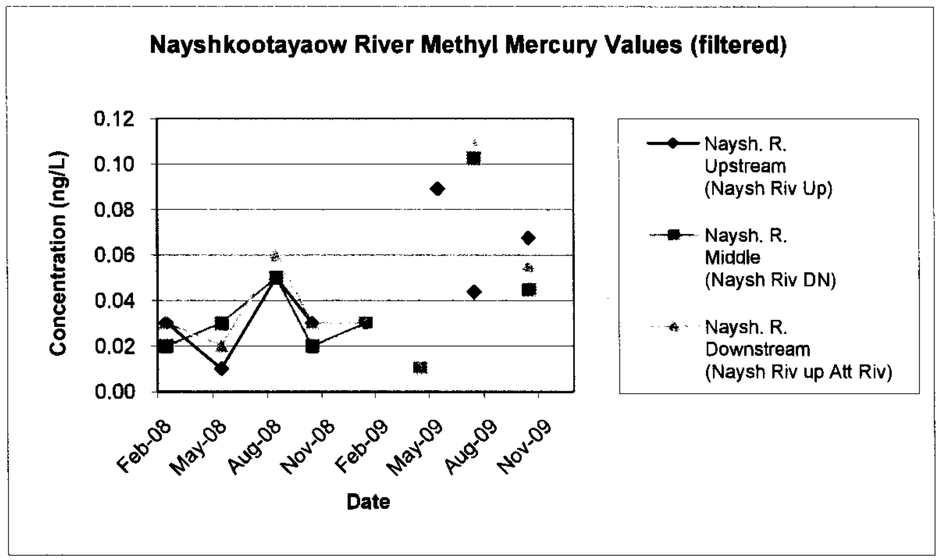
SCALE: As Shown (NAD83 UTM Zone17N)	DATE: February 2009
PROJECT No: TC91504	FIGURE: 3

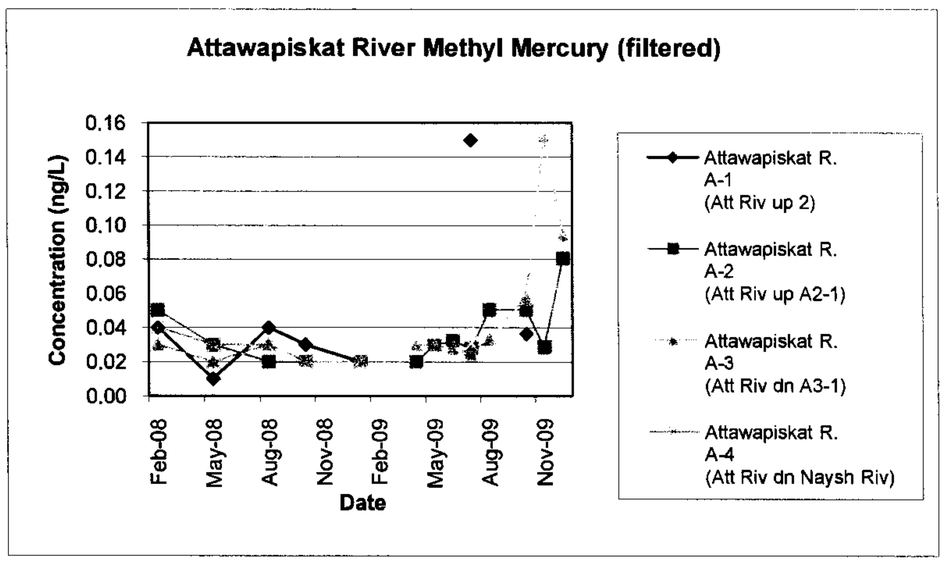
E:\AMEC3-ALL DATA\Simon's MISC\Ken's Work\For Dave\Mercury Monitoring Maps\surface_Water_Monitoring_Stations(8.5x11).mxd

FIGURE 4
NAYSHKOOTAYAOW AND ATTAWAPISKAT RIVER TOTAL AND METHYL MERCURY TRENDS (filtered values)









284000 288000 292000 296000 300000 304000 308000 312000

5868000 5864000 5860000 5856000 5852000 5848000 5844000 5840000

ATT-US-1

Approximate Well Field Discharge Location

ATT-DS-1

ATT-DS-2

Approximate NG Creek Supplementation Discharge Point

Approximate Northeast Fen Discharge into NG Creek

NGC-1

NAYSH -DS-T6

VICTOR MINE

SGC-1

Approximate SG Creek Supplementation Discharge Point

Approximate Southwest Fen Discharge into SG Creek

NAYSH TRIB 3

ST-5A-1

E:\AMEC3-ALL DATA\Jason D_Misc\Hg_Samples_May2010\MXD_Maps\Hg_Samples_2009.mxd

LEGEND

- 2009 Mercury Sample Locations (Labelled with ID)
- North and South Granny Creek Supplementation Discharge Points
- Granny Creek Supplementation Pipeline
- General Fen Drainage Direction

0 1.25 2.5 5 7.5 10
Kilometres

Datum: NAD83
Projection: UTM Zone 17N

N W E S

De Beers Canada

amec

VICTOR MINE

Mercury Sample Locations 2009

SCALE: 1:145,000	DATE: May 2010
PROJECT No: TC91501	FIGURE:

000454

FIGURE 6: SITE SPECIFIC BROOK STICKLEBACK MEAN MERCURY BODY BURDEN (± 1 SD)
(POST HOC COMPARISON SIGNIFICANT AT P = 0.05)

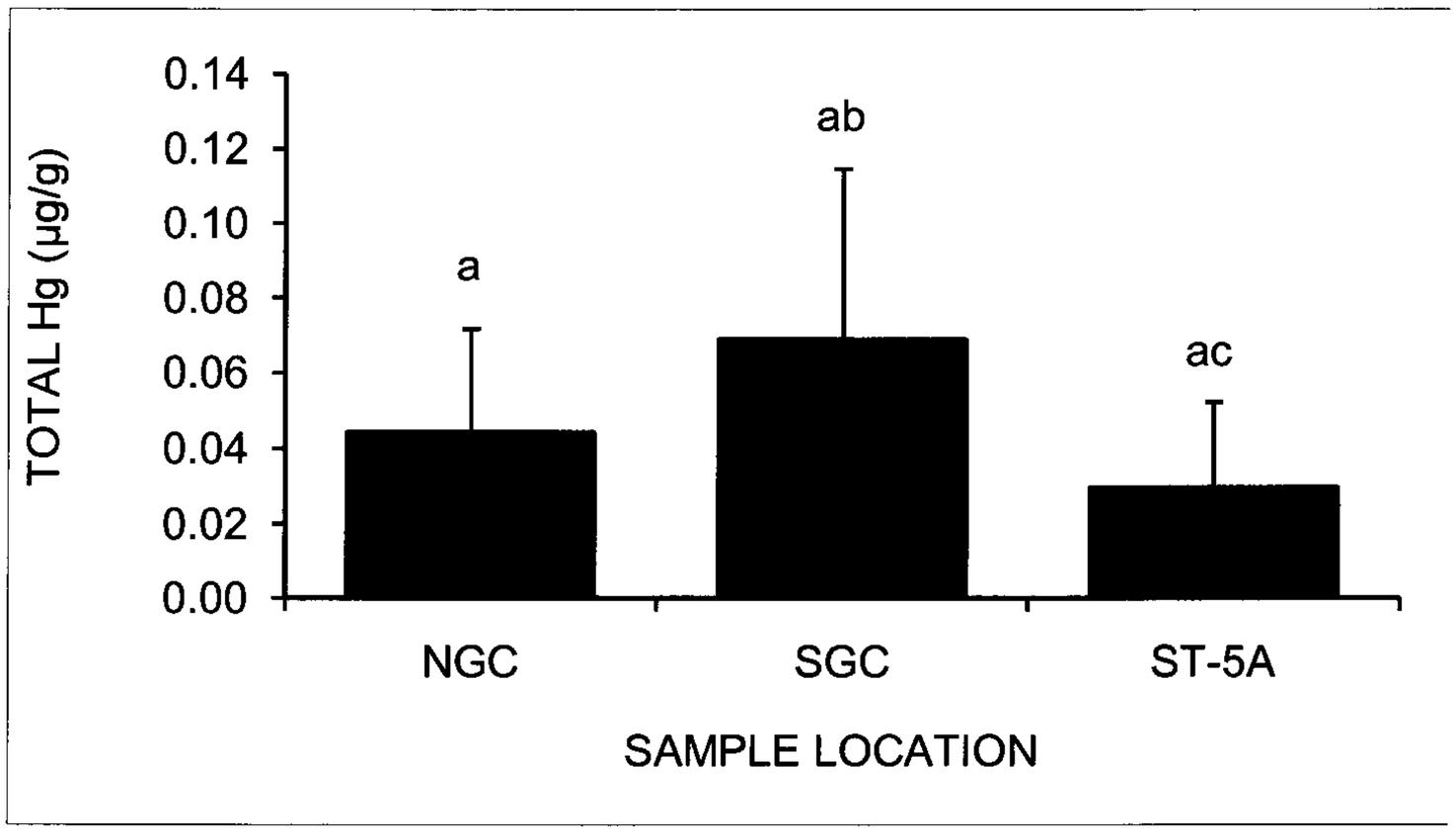
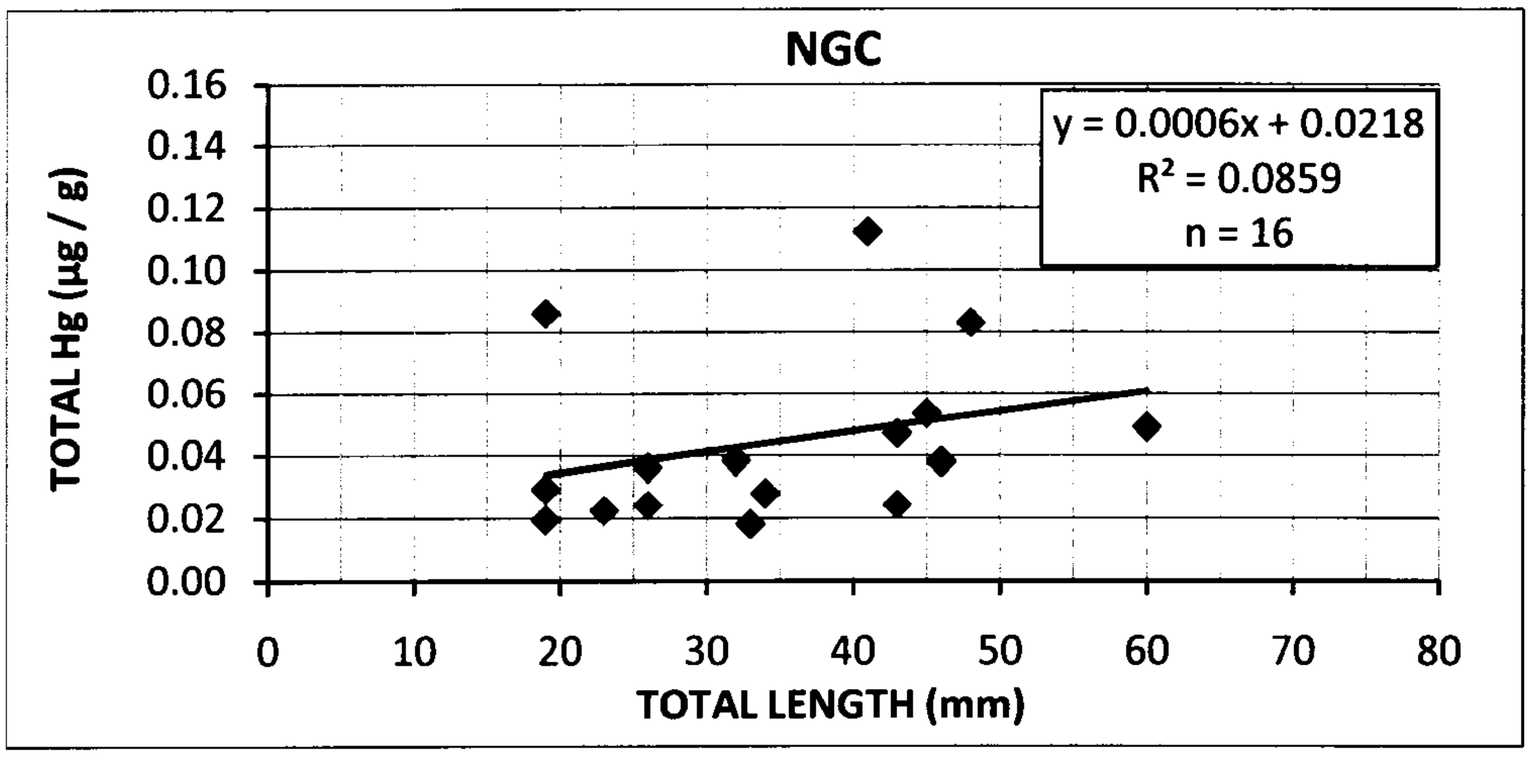
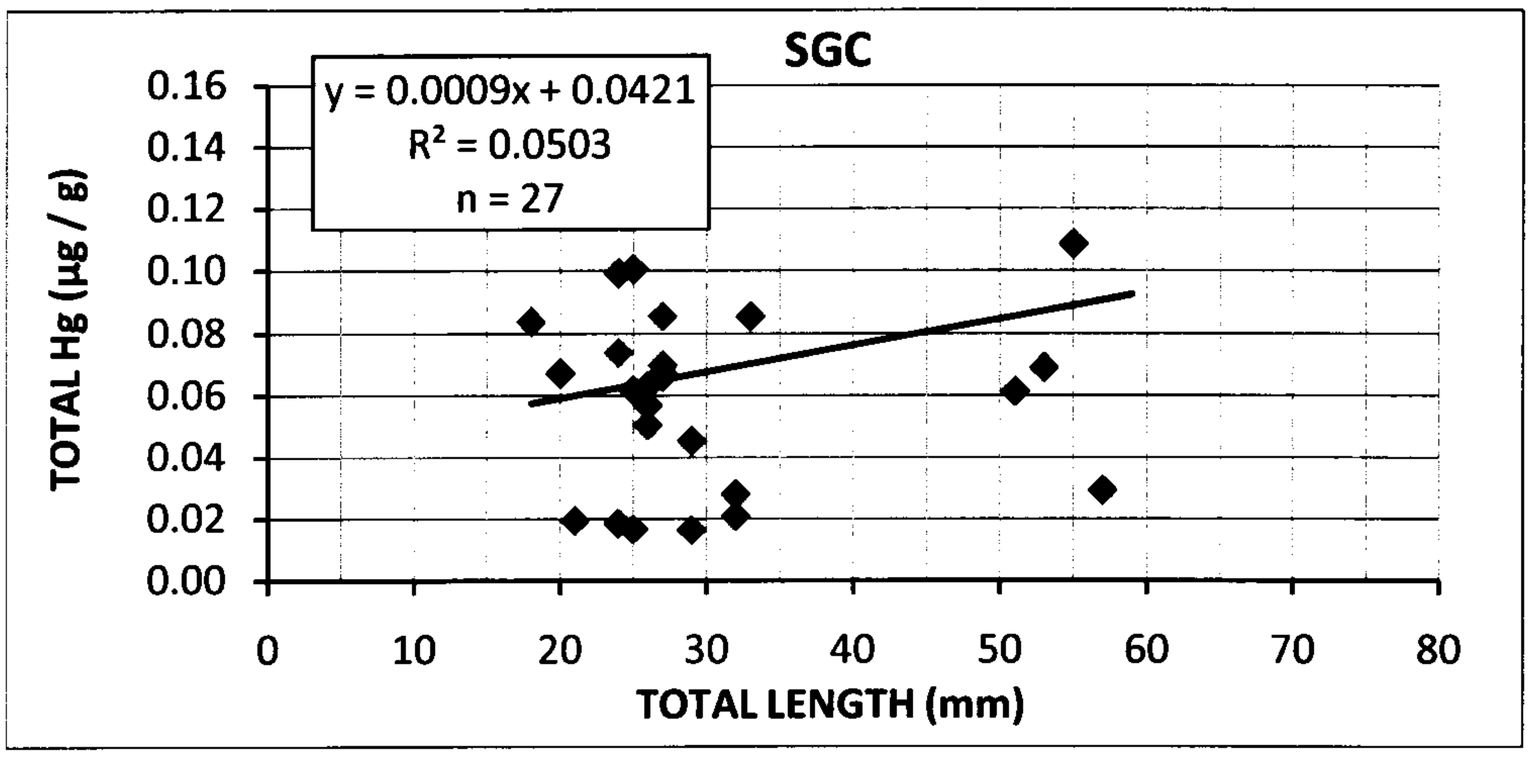


FIGURE 7: SITE SPECIFIC BROOK STICKLEBACK MERCURY BODY BURDEN AS A FUNCTION OF TOTAL LENGTH





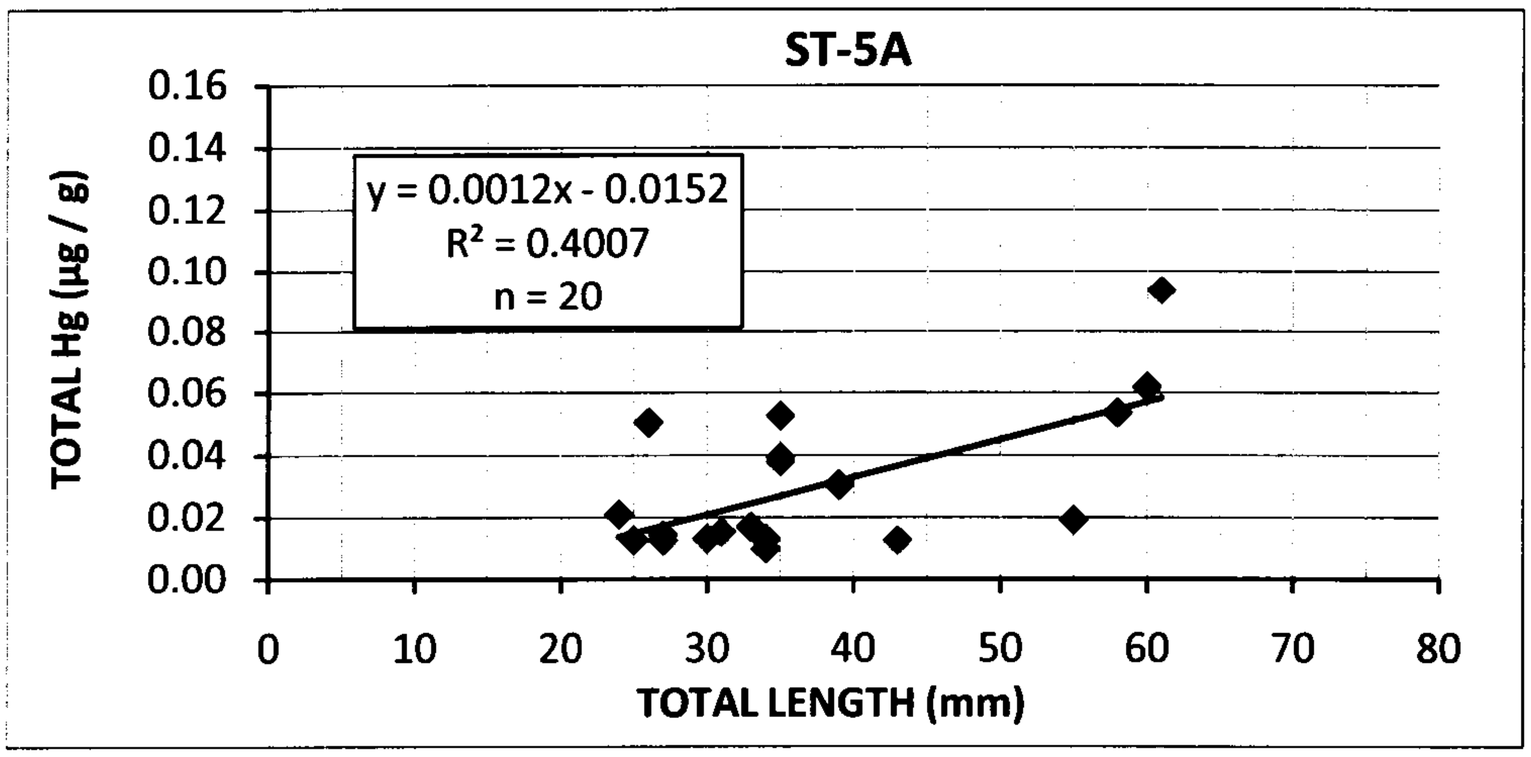


FIGURE 8: SITE SPECIFIC FINESCALE DACE MEAN MERCURY BODY BURDEN (± 1 SD)
(POST HOC COMPARISON SIGNIFICANT AT P = 0.05)

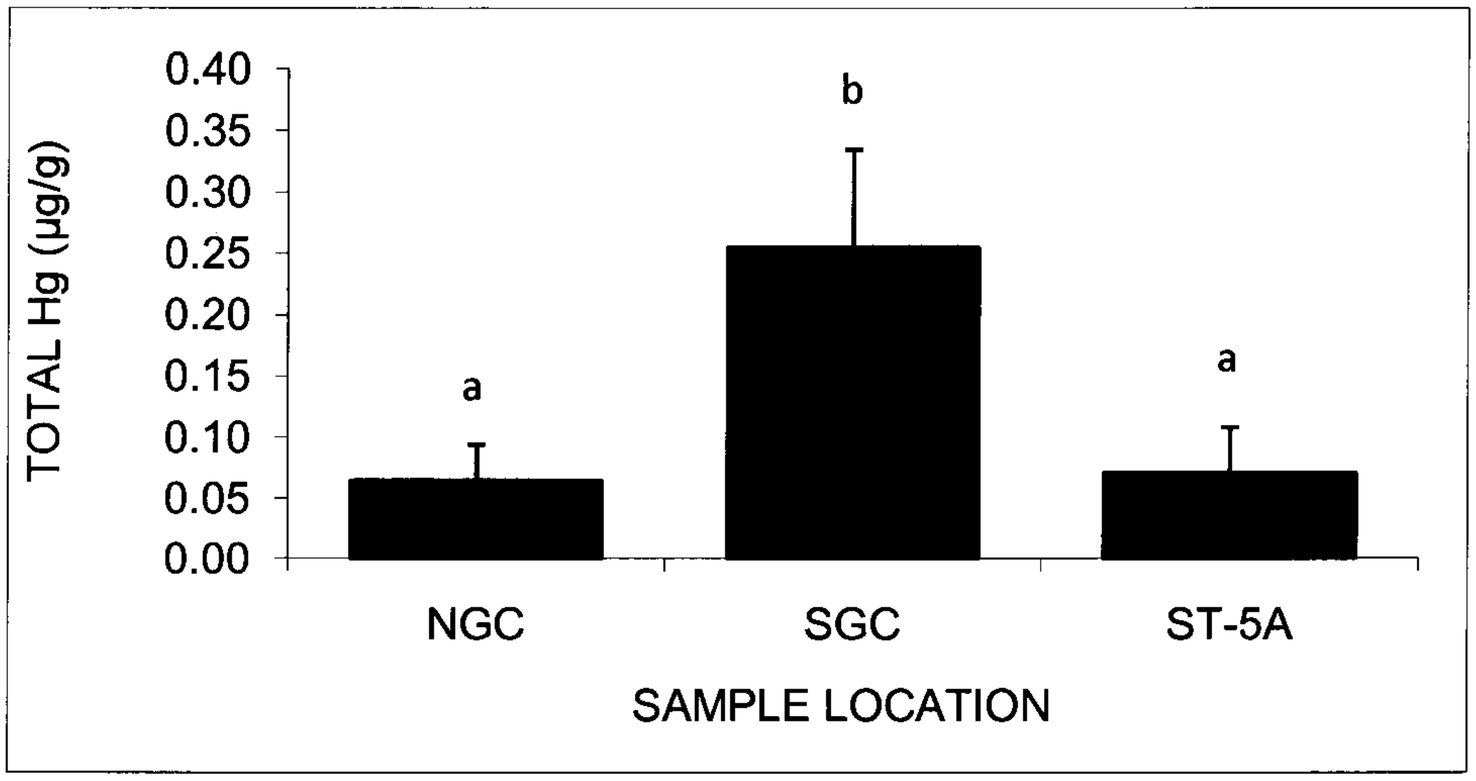
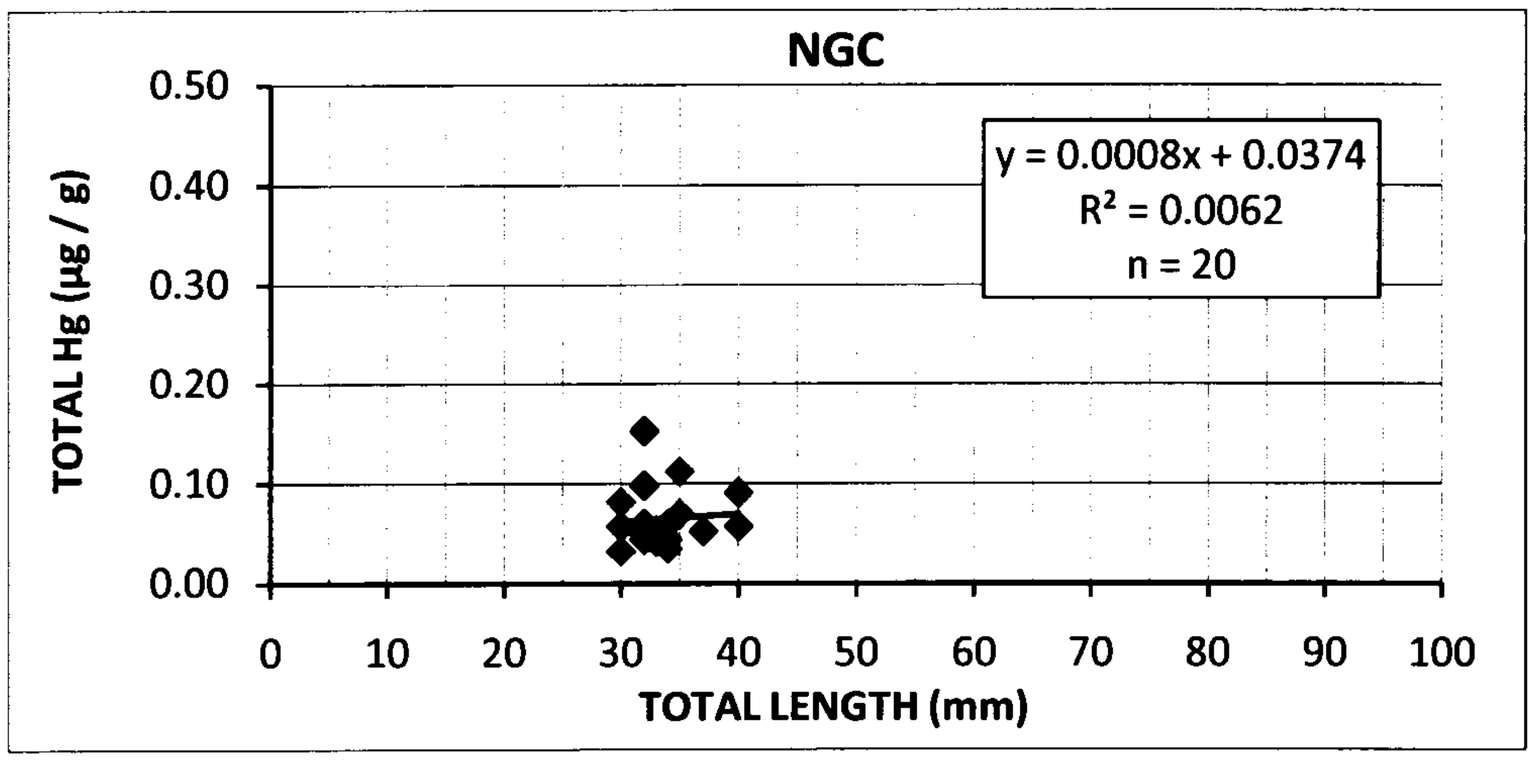
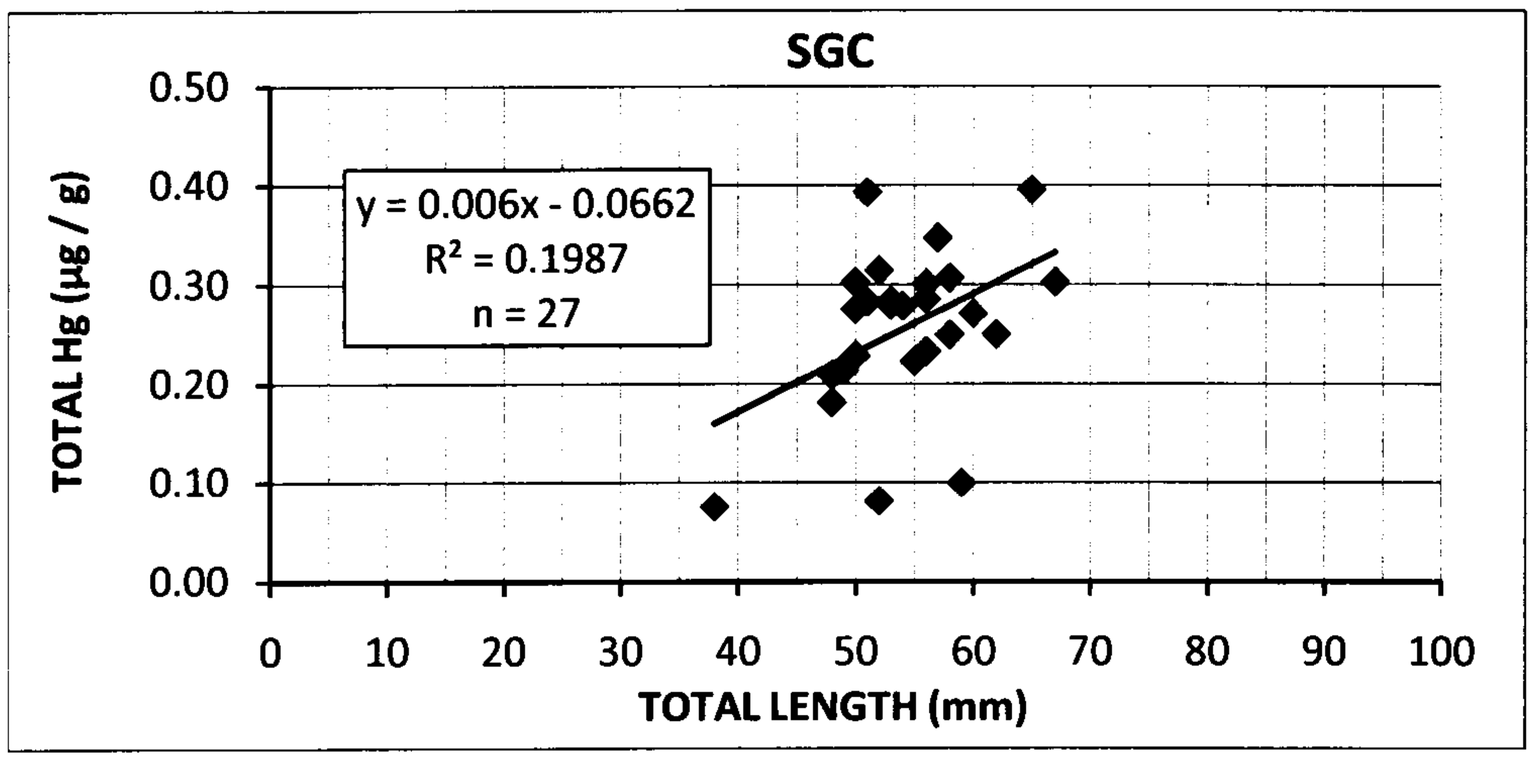


FIGURE 9: SITE SPECIFIC FINESCALE DACE MERCURY BODY BURDEN AS A FUNCTION OF TOTAL LENGTH





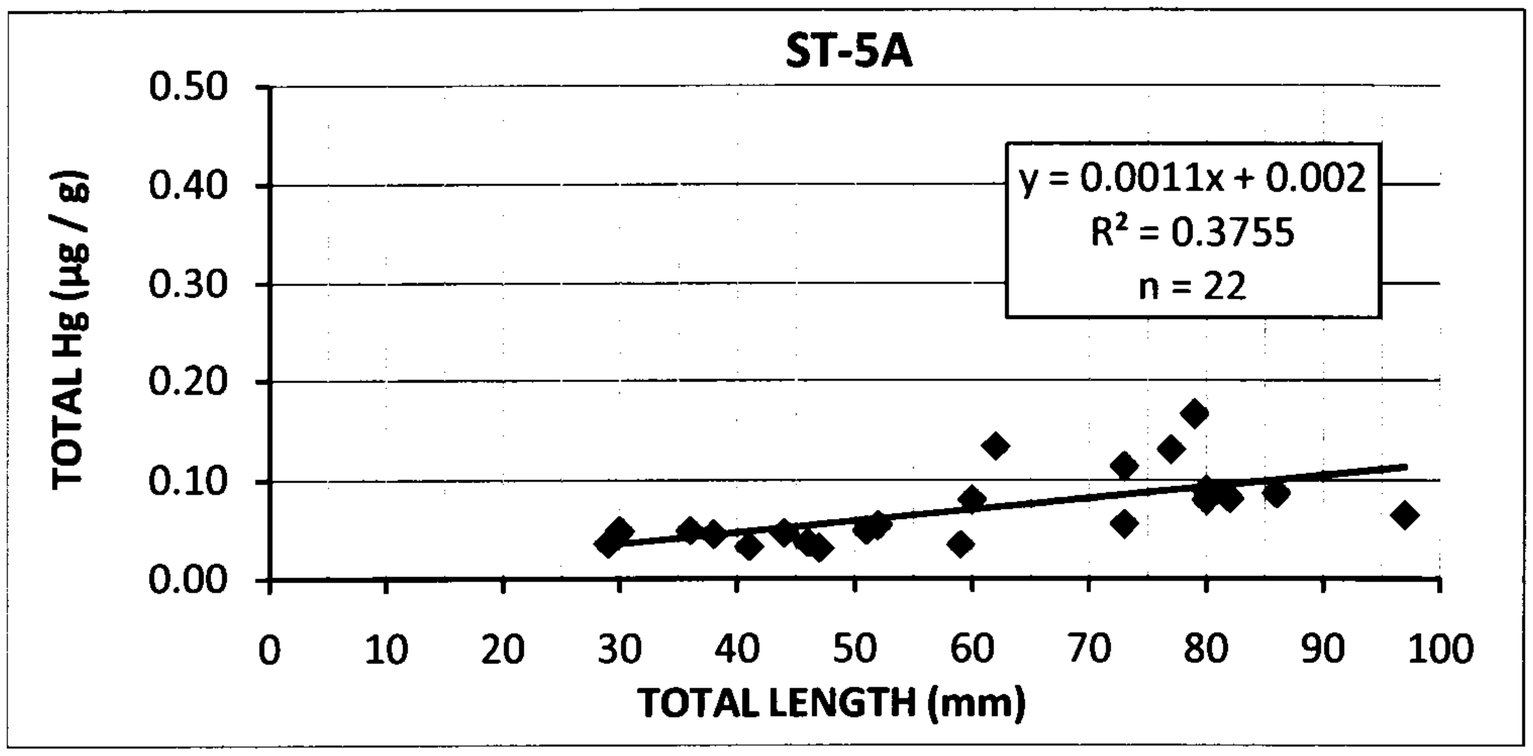


FIGURE 10: SITE SPECIFIC PEARL DACE MEAN MERCURY BODY BURDEN (± 1 SD)
(POST HOC COMPARISON SIGNIFICANT AT P = 0.05)

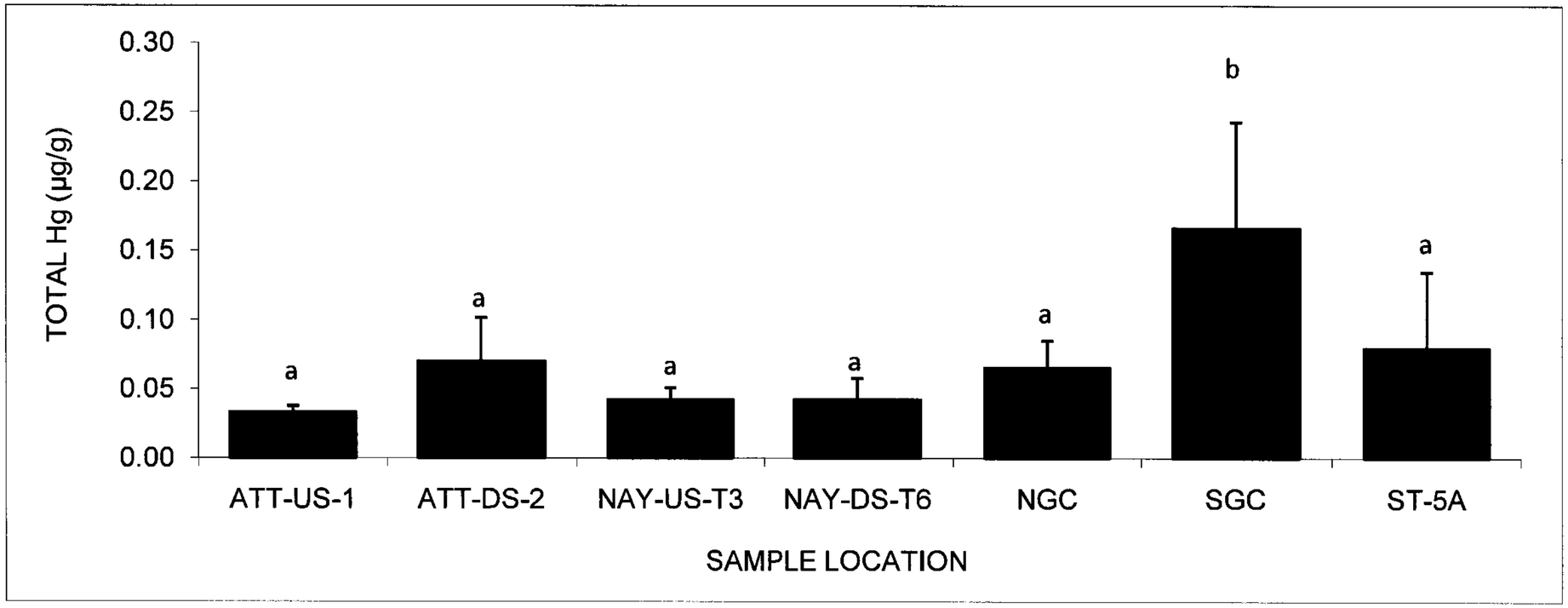
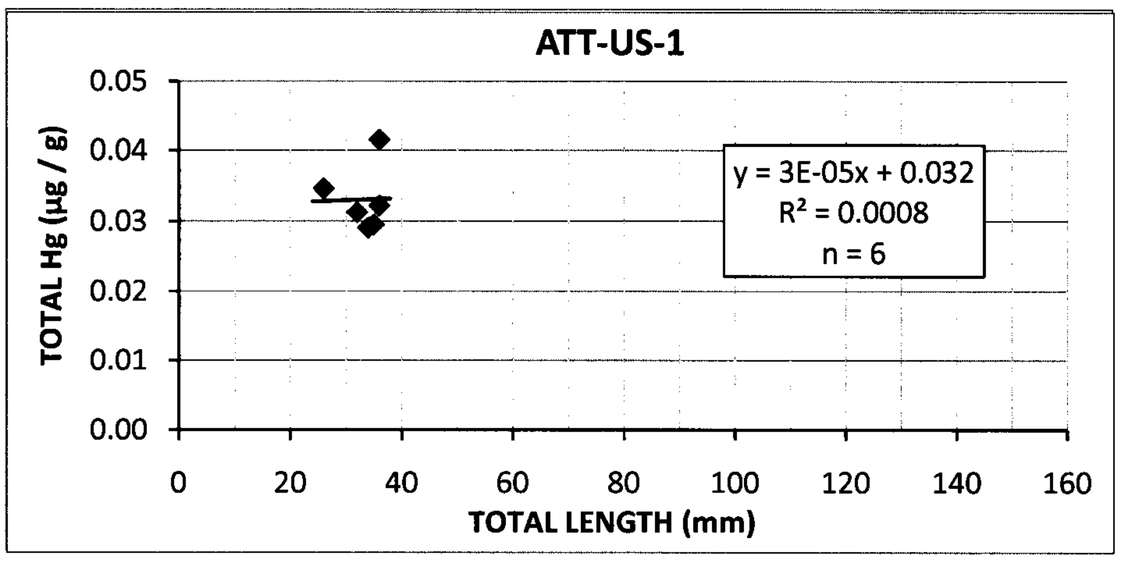
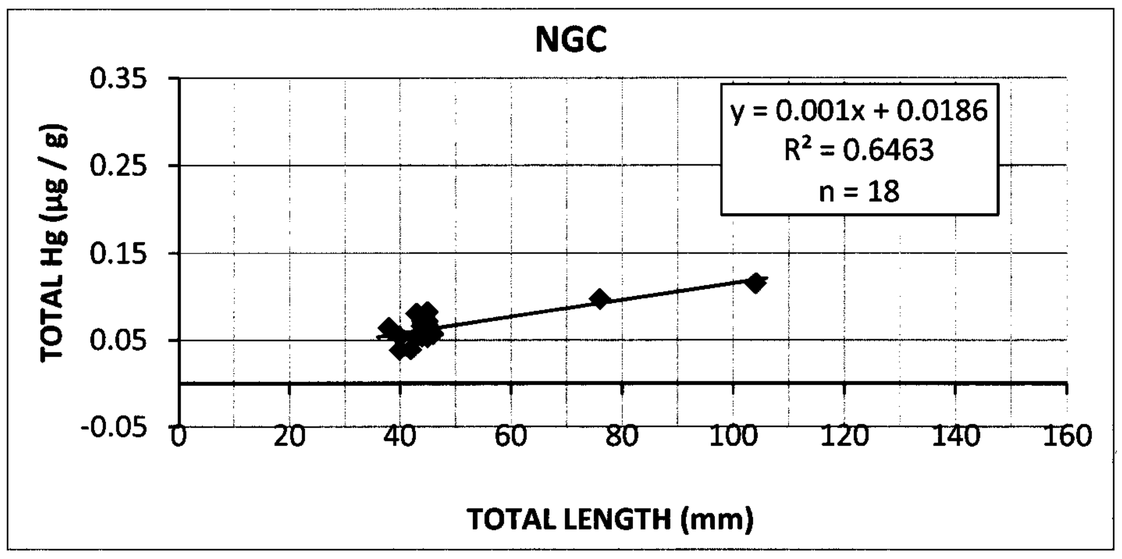
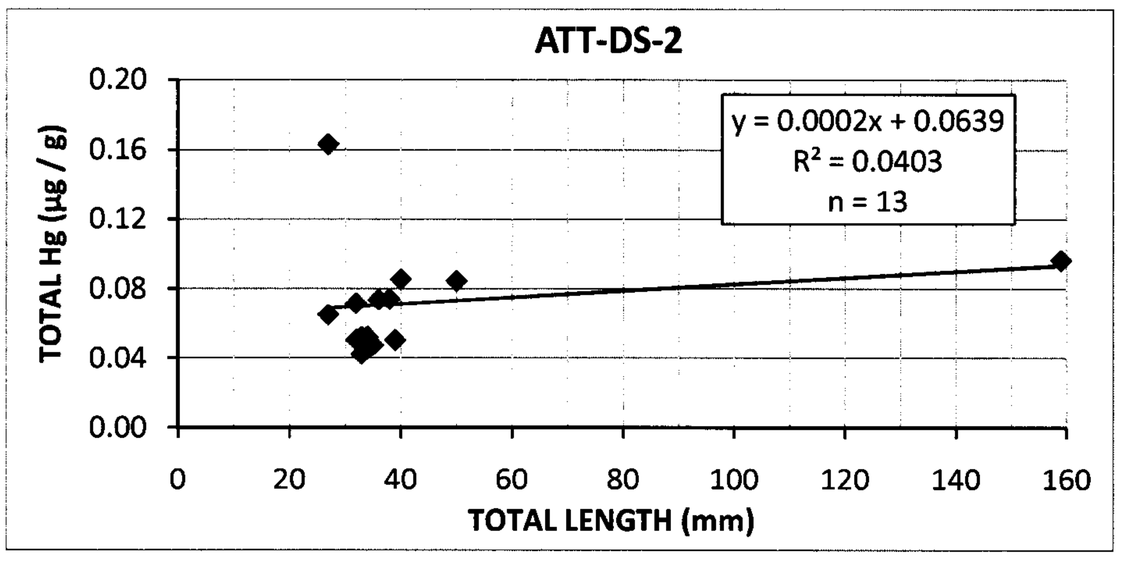
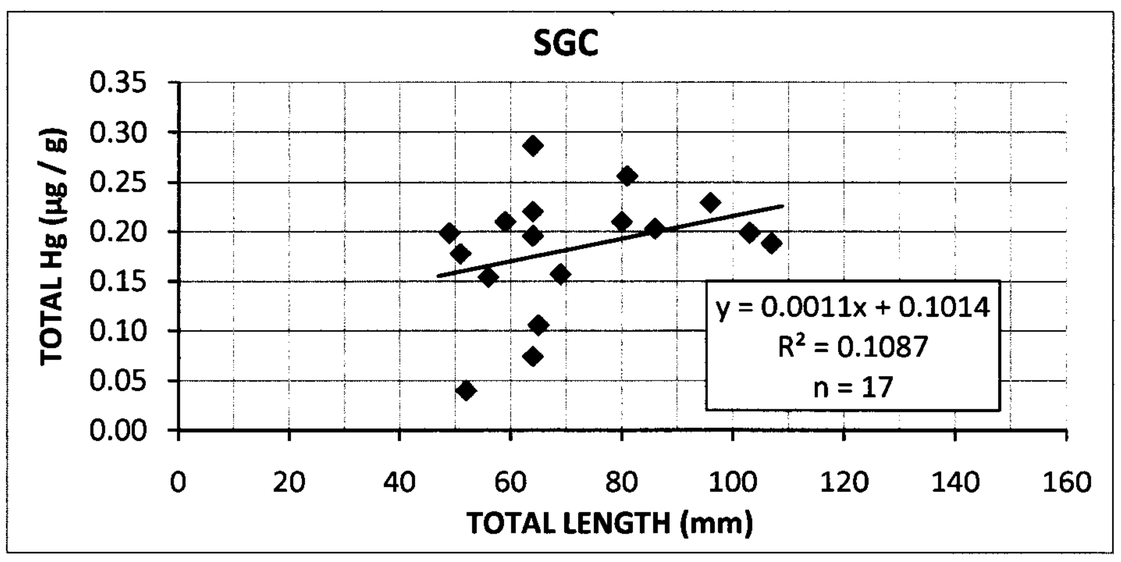


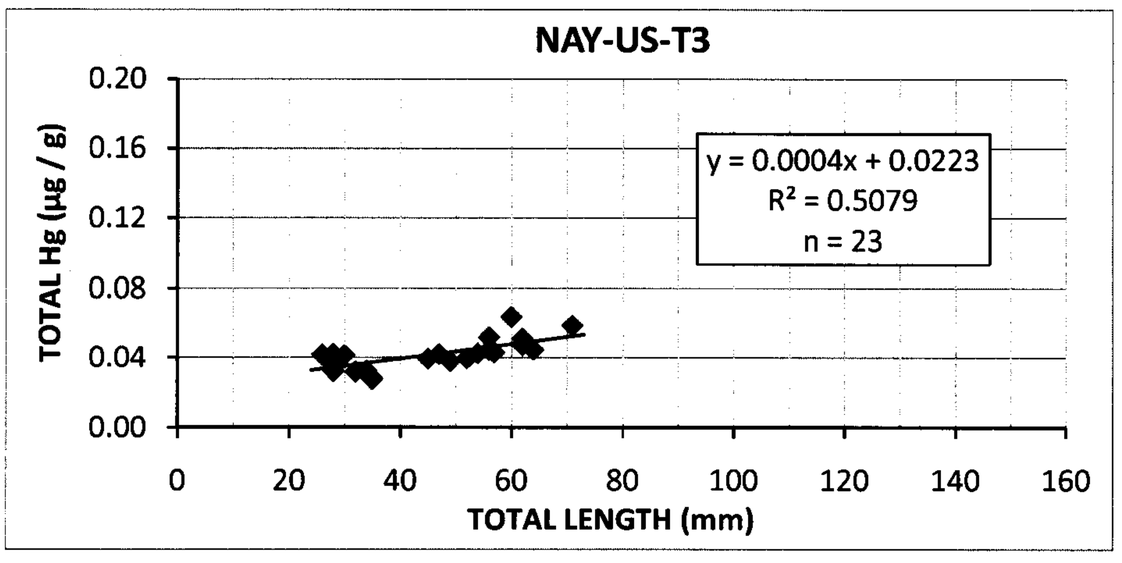
FIGURE 11: SITE SPECIFIC PEARL DACE MERCURY BODY BURDEN AS A FUNCTION OF TOTAL LENGTH

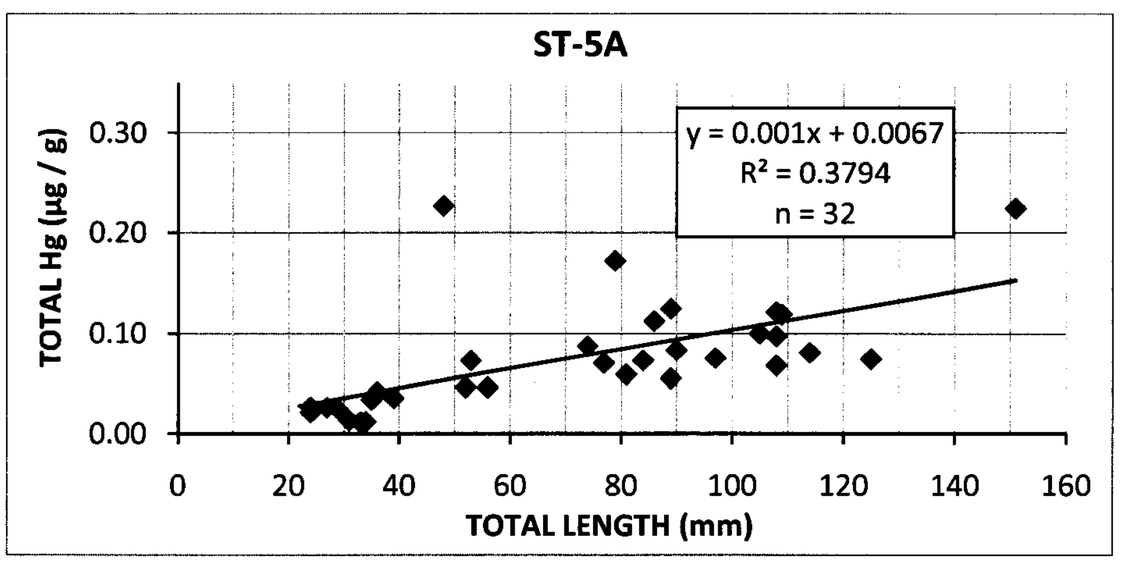












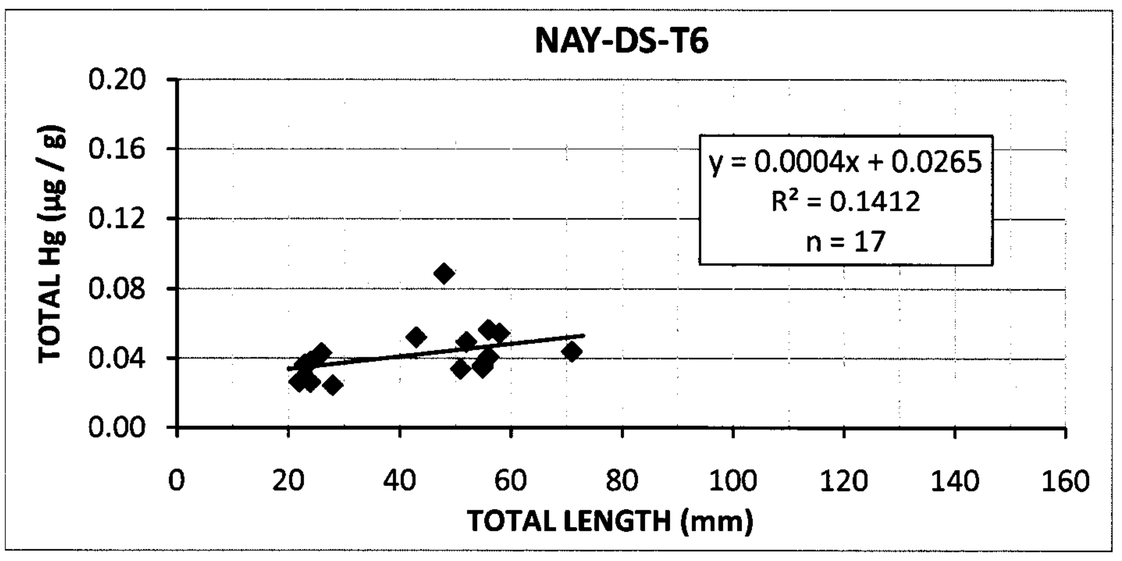


FIGURE 12: SITE SPECIFIC TROUT-PERCH MEAN MERCURY BODY BURDEN (± 1 SD)
(POST HOC COMPARISON SIGNIFICANT AT P = 0.05)

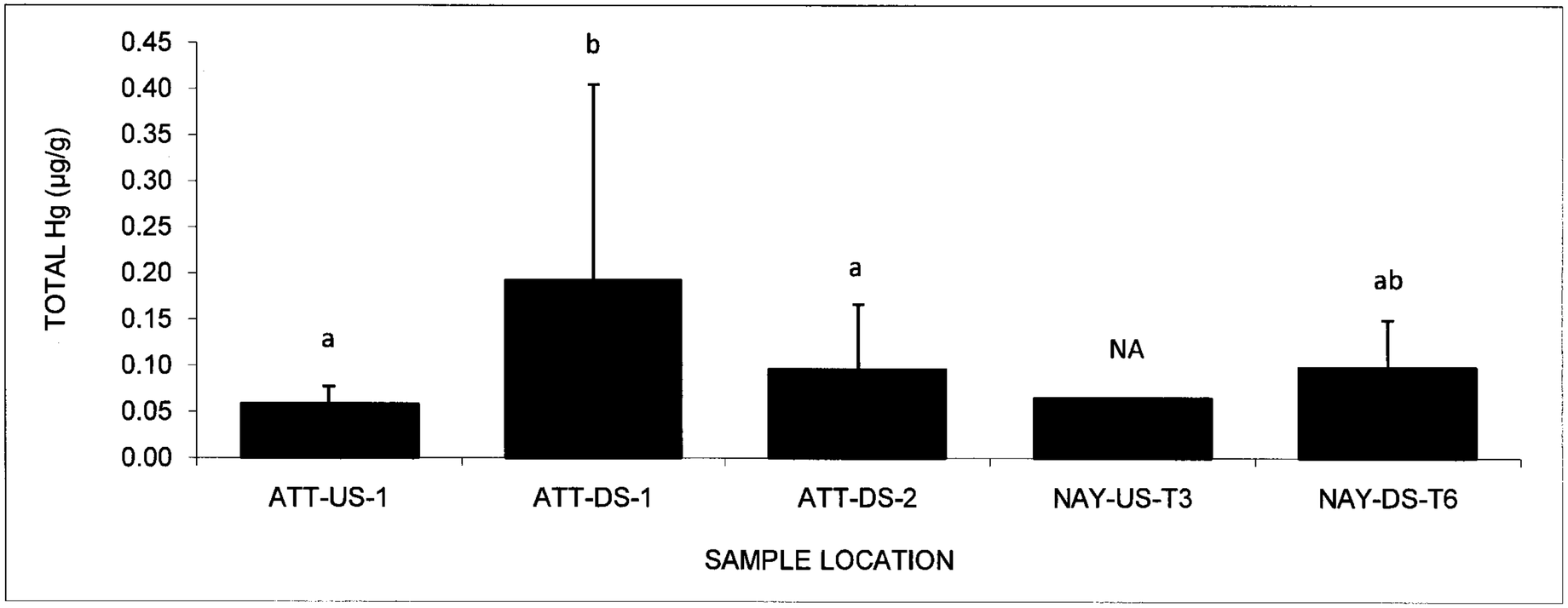
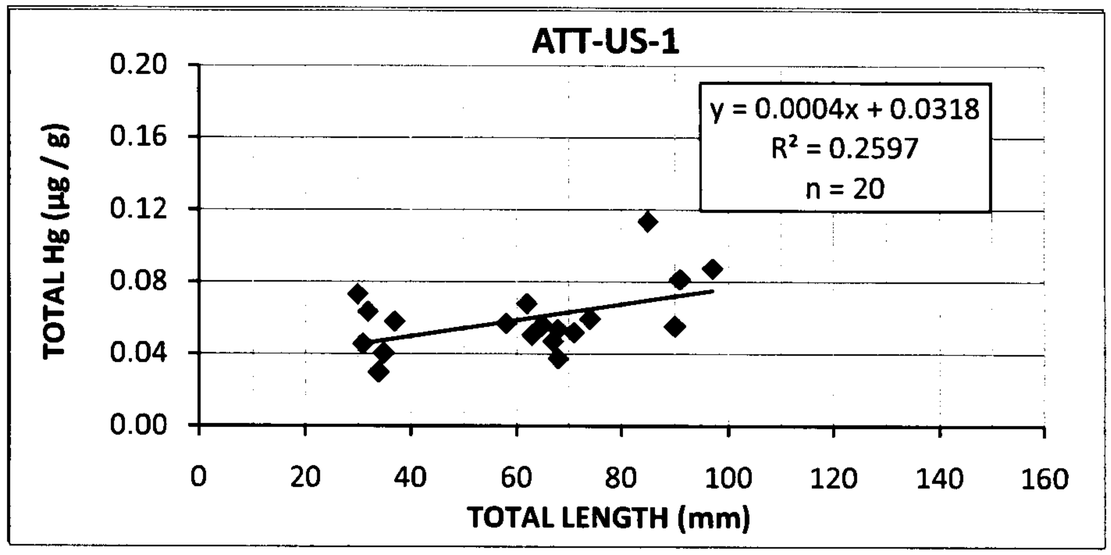
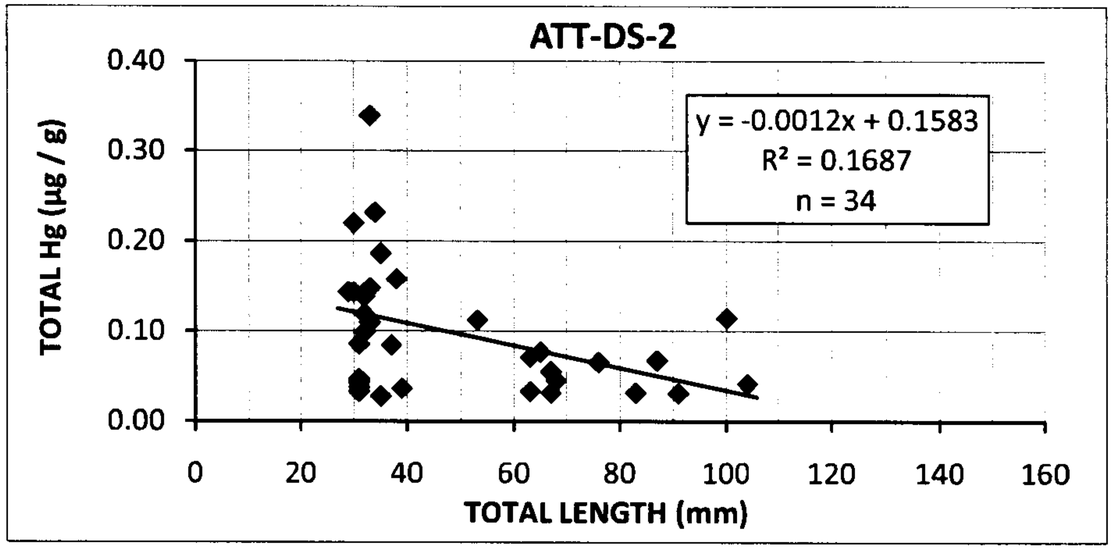
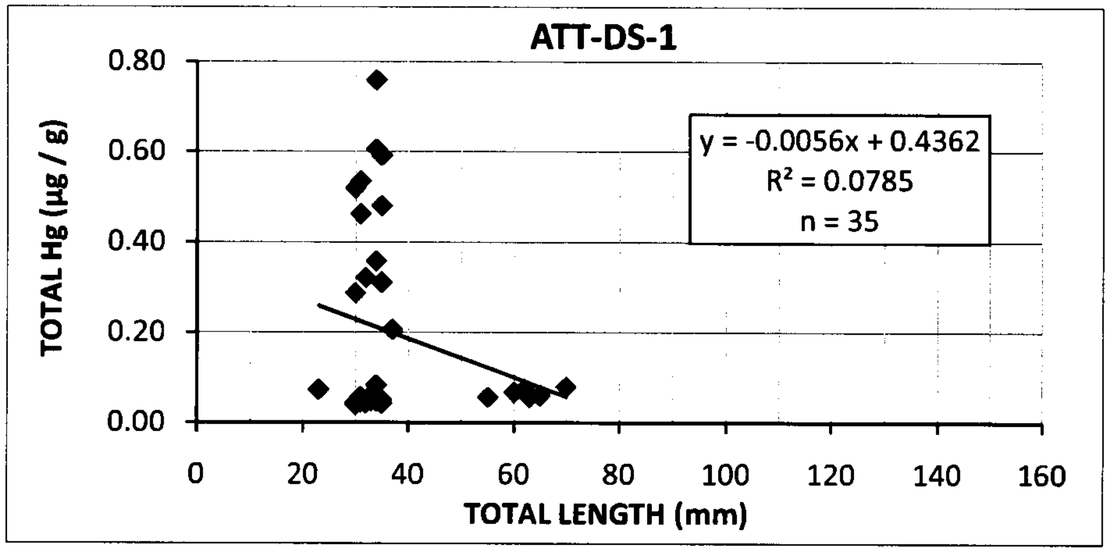


FIGURE 13: SITE SPECIFIC TROUT-PERCH MERCURY BODY BURDEN AS A FUNCTION OF TOTAL LENGTH







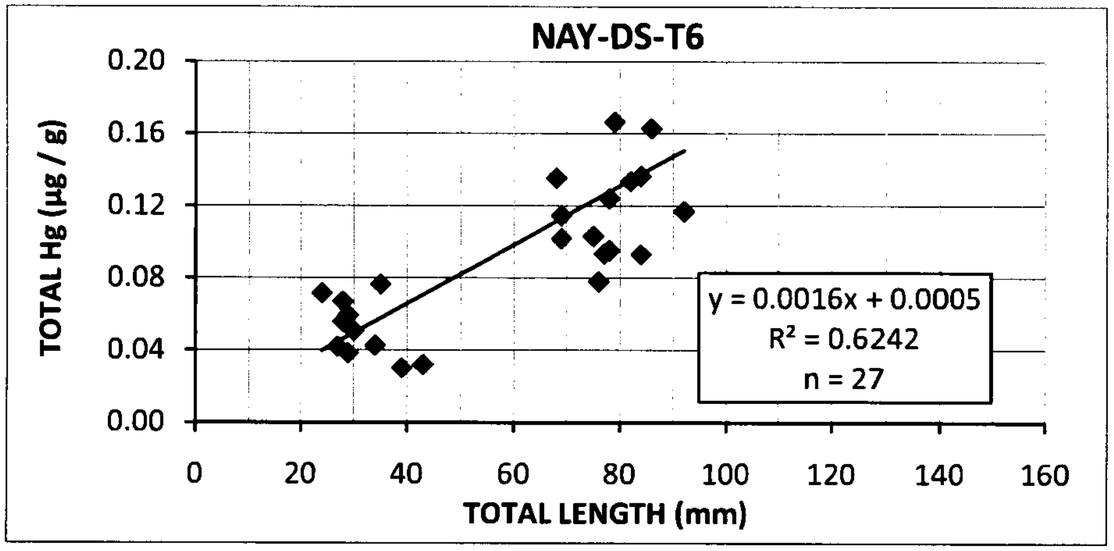


FIGURE 14: SITE SPECIFIC YELLOW PERCH MEAN MERCURY BODY BURDEN (± 1 SD)
(POST HOC COMPARISON SIGNIFICANT AT P = 0.05)

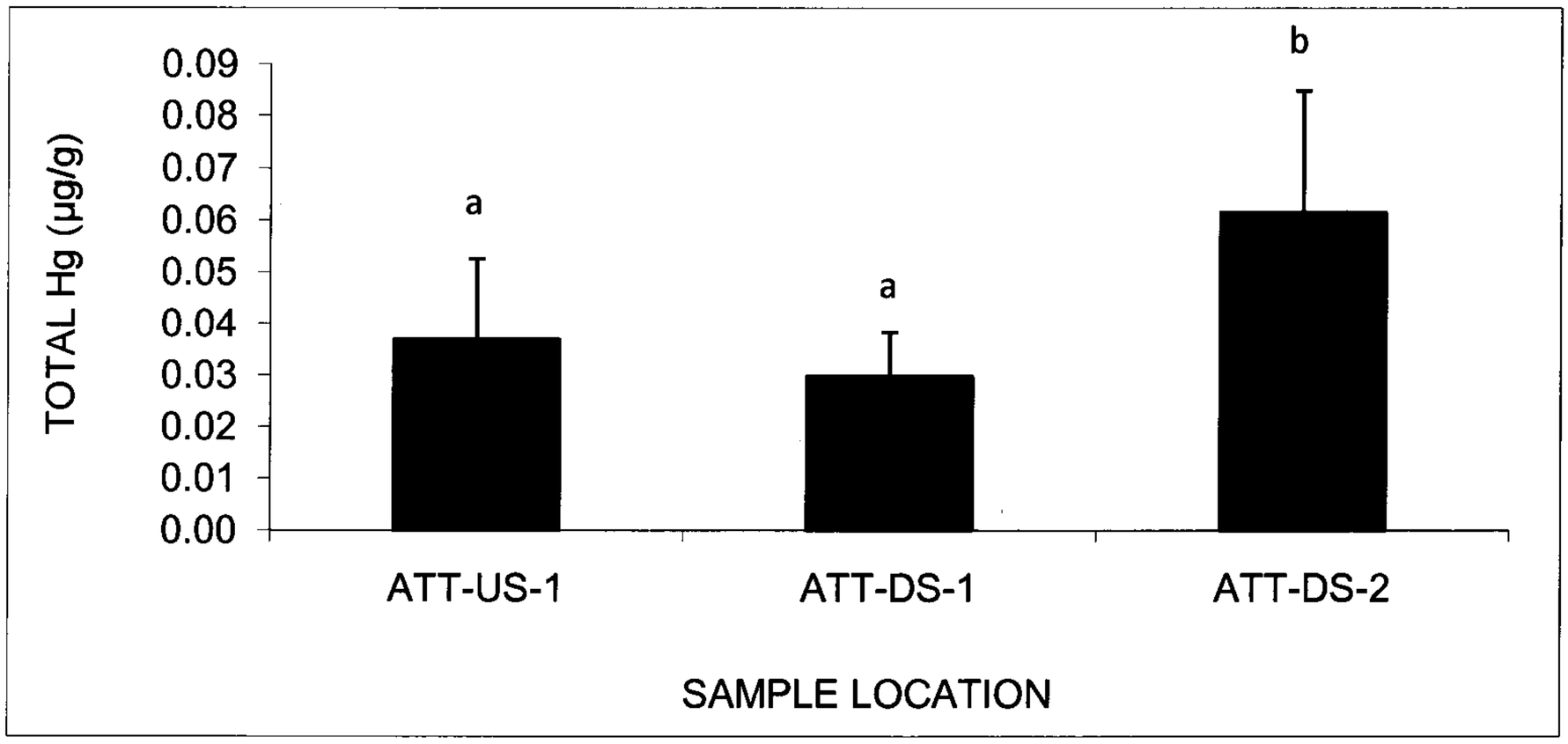


FIGURE 15: SITE SPECIFIC YELLOW PERCH MERCURY BODY BURDEN AS A FUNCTION OF TOTAL LENGTH