



## Update on HHRA

- Fish and Blueberries
- Other progress on the HHRA
- Next Steps in the HHRA

*Community Advisory Committee Meeting, Wednesday, November 19<sup>th</sup>, 2008*

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# FISH AND BLUEBERRY SAMPLING

- Draft report submitted to TAC last week
- Stantec Consulting in Guelph retained to collect fish, surface water, sediment and blue berries for analysis; Manitoba Conservation collected fish from Schist and Athapap
- Dave Price assisted by collecting blueberries from 13 sites

**Table 2.1 Lakes sampled to collect fish for investigation of risk to human health.**

Lake	Fish fillets	Sediment Sample	Water Sample	Livers for storage
<b>Manitoba</b>				
Big Island Lake	10	3	1	10 <sup>b</sup>
Embury Lake (Trout Lake)	10	4	1	10
Schist Lake	10+/species <sup>a</sup>	5	2	10 <sup>b</sup>
Kisseynew Lake	10	4	1	10
Bakers Narrows	10	3	1	10
Athapapuskow Lake	10+/species <sup>a</sup>	4	1	10
<b>Saskatchewan</b>				
Phantom Lake	10	3	1	10 <sup>b</sup>
Hamell Lake	10	3	1	10
Denare Beach	10	3	1	10
Amisk Lake (open water)	10	3	1	10
Reference Lake (Jan Lake)	10	4	1	10

<sup>a</sup> Metals in fish tissue data provided by the Province of Manitoba Water Stewardship Department.

<sup>b</sup> Data available from the HBMS EEMs (2004, 2007)





Source: N

## Blueberry sample locations

REPAIRED FOR:

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# Surface Water Results

- With the exception of mercury, concentrations for all chemicals of concern from all lakes are below drinking water criteria
- Three lakes exceeded environmental criteria for copper
- All lakes exceeded environmental water criteria for mercury, including the reference lake (Jan Lake); 4/11 lakes exceed drinking water criteria for mercury
  - No concentration trend or gradient was observed for the lakes (i.e., concentration does not increase with proximity to facility)



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## Sediment Results

- In general, there was no obvious relationship between sediment metal concentrations and expected influence from the HBMS effluent and stack plumes
- Sediment levels were highest in Schist, Hamell and Big Island; and, lowest in Bakers Narrows and Jan Lake (reference)
- No human health criteria for comparison; most relevant to the evaluation of ecological risks

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## Fish Results

- Levels generally seem low for all COCs, with the exception of mercury
- Lead levels were mostly non-detect with only a few exceptions
- Species differences were minor
- Consumption guideline is only available for mercury
  - Some exceedances of consumption guideline in several lakes
  - There does not seem to be a geographical pattern to the exceedances that related to the facility



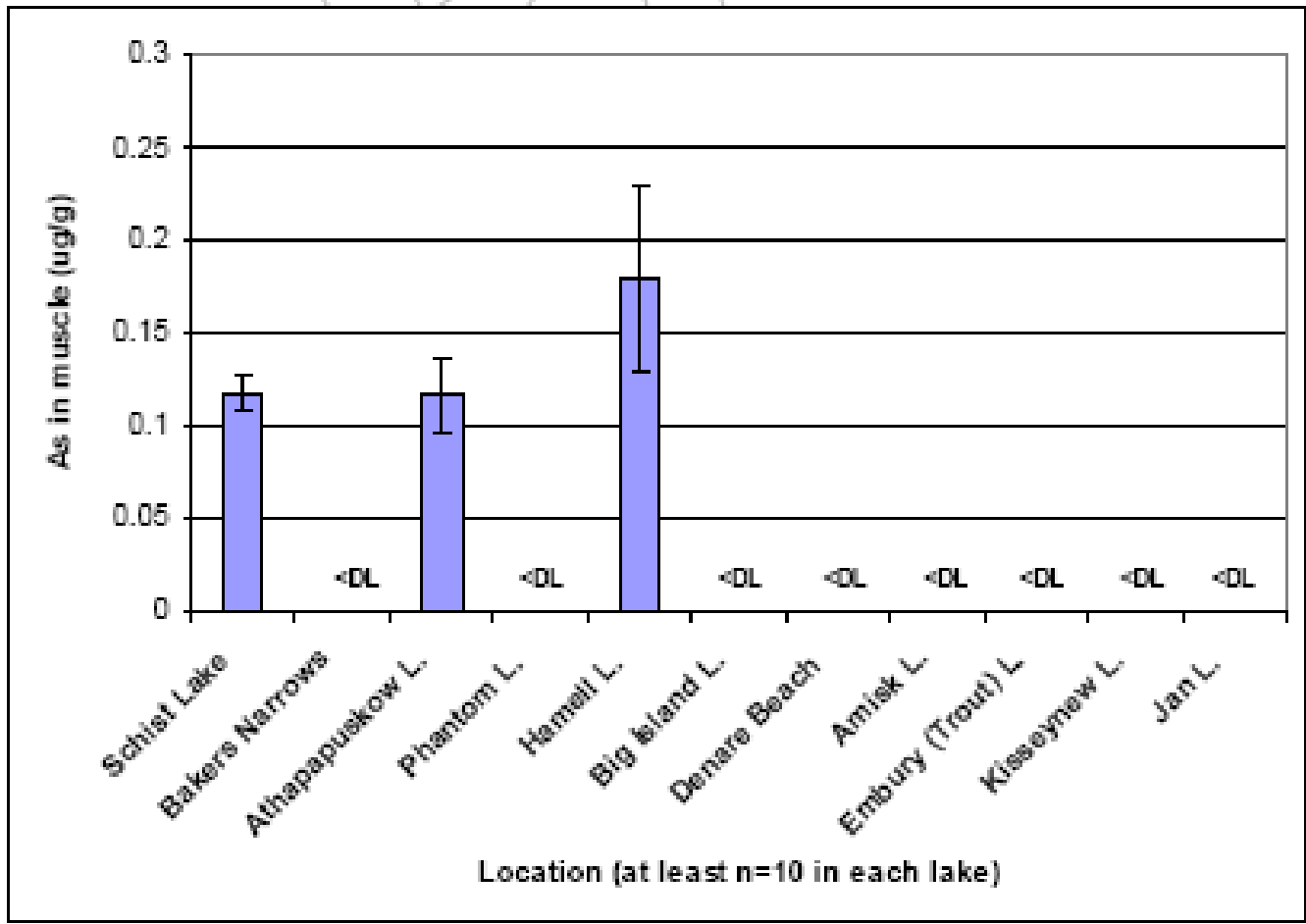


Figure 3.1 Arsenic concentrations in the fillet of northern pike

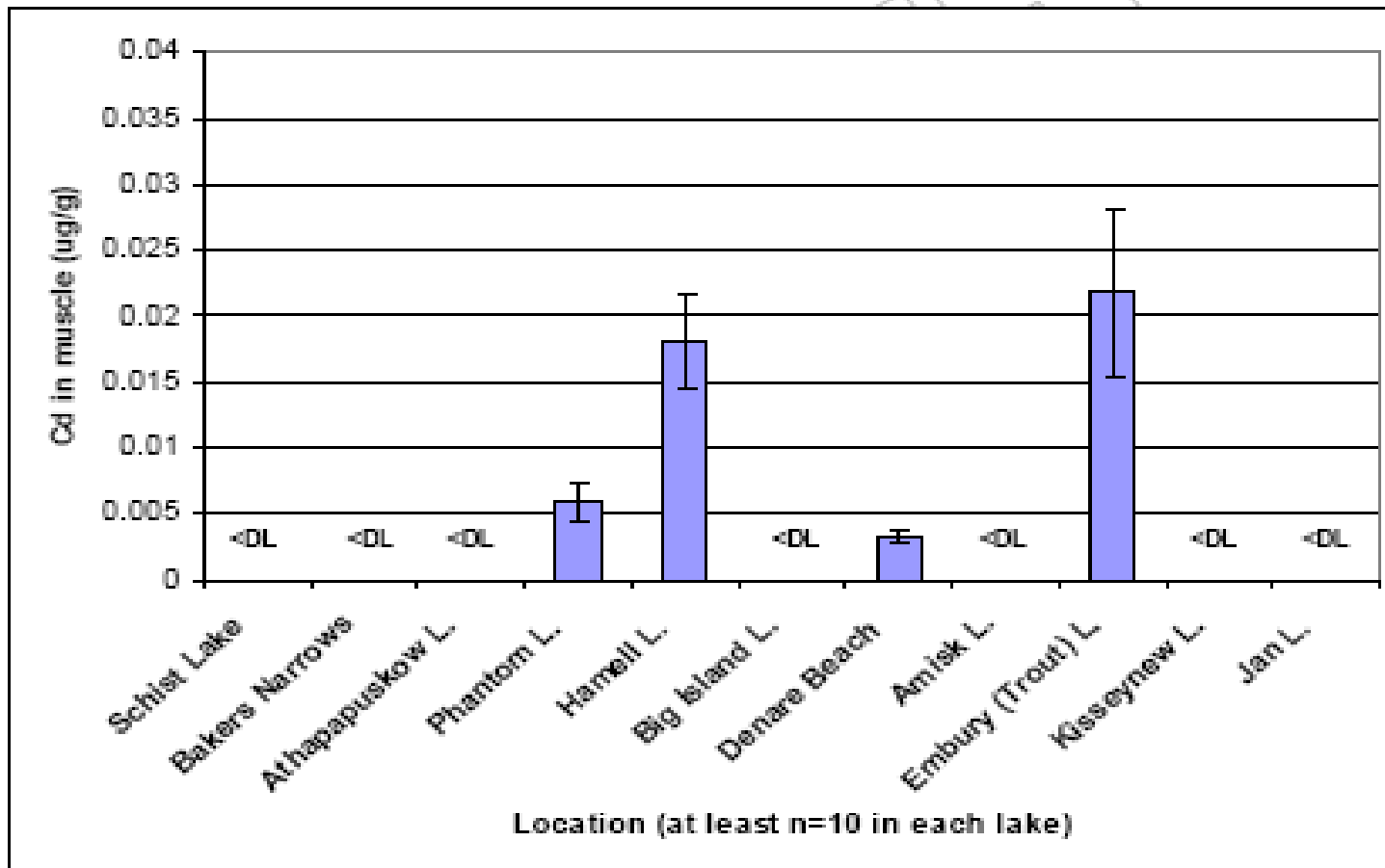


Figure 3.2 Cadmium concentrations in the fillet of northern pike

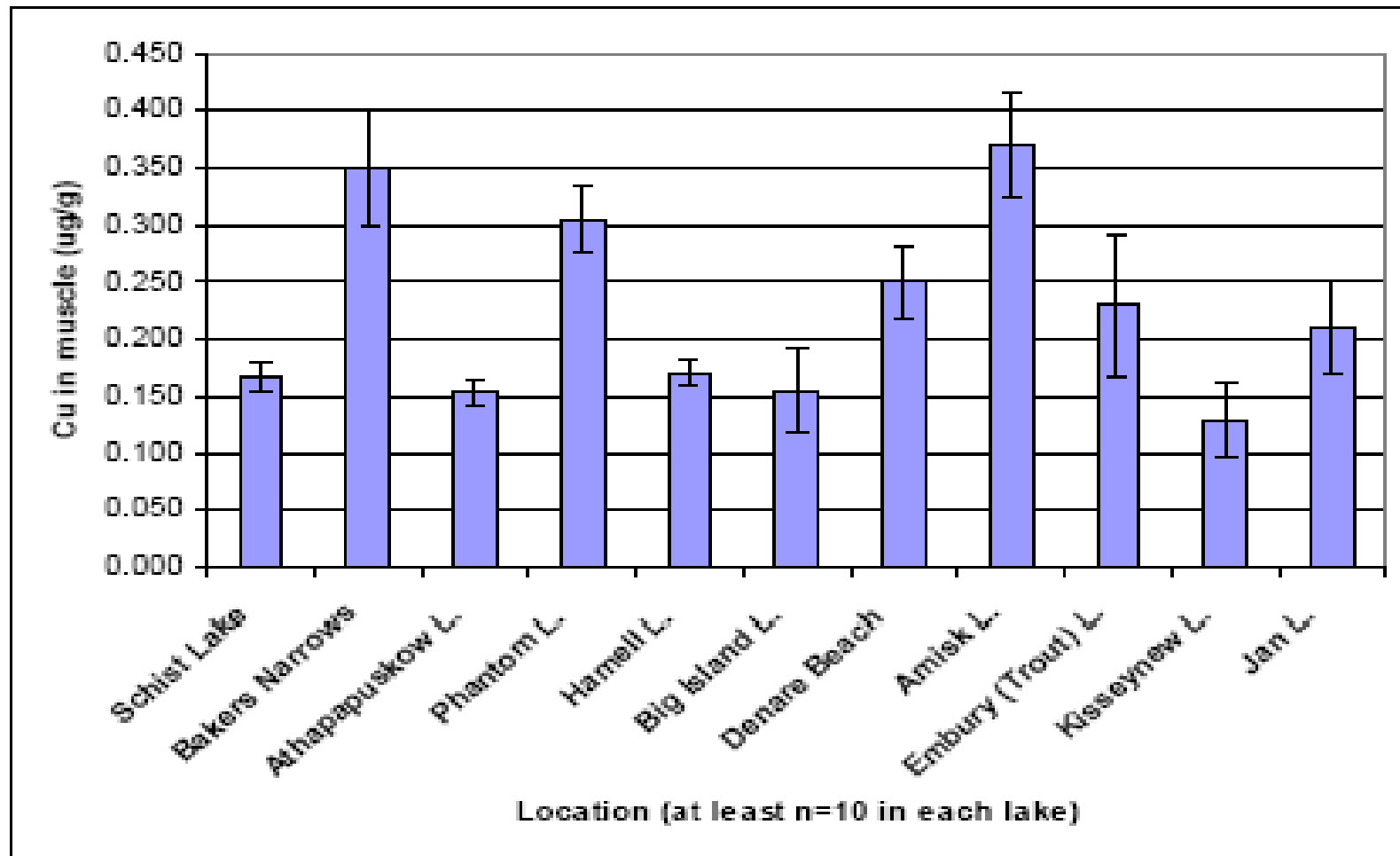


Figure 3.3 Copper concentrations in the fillet of northern pike

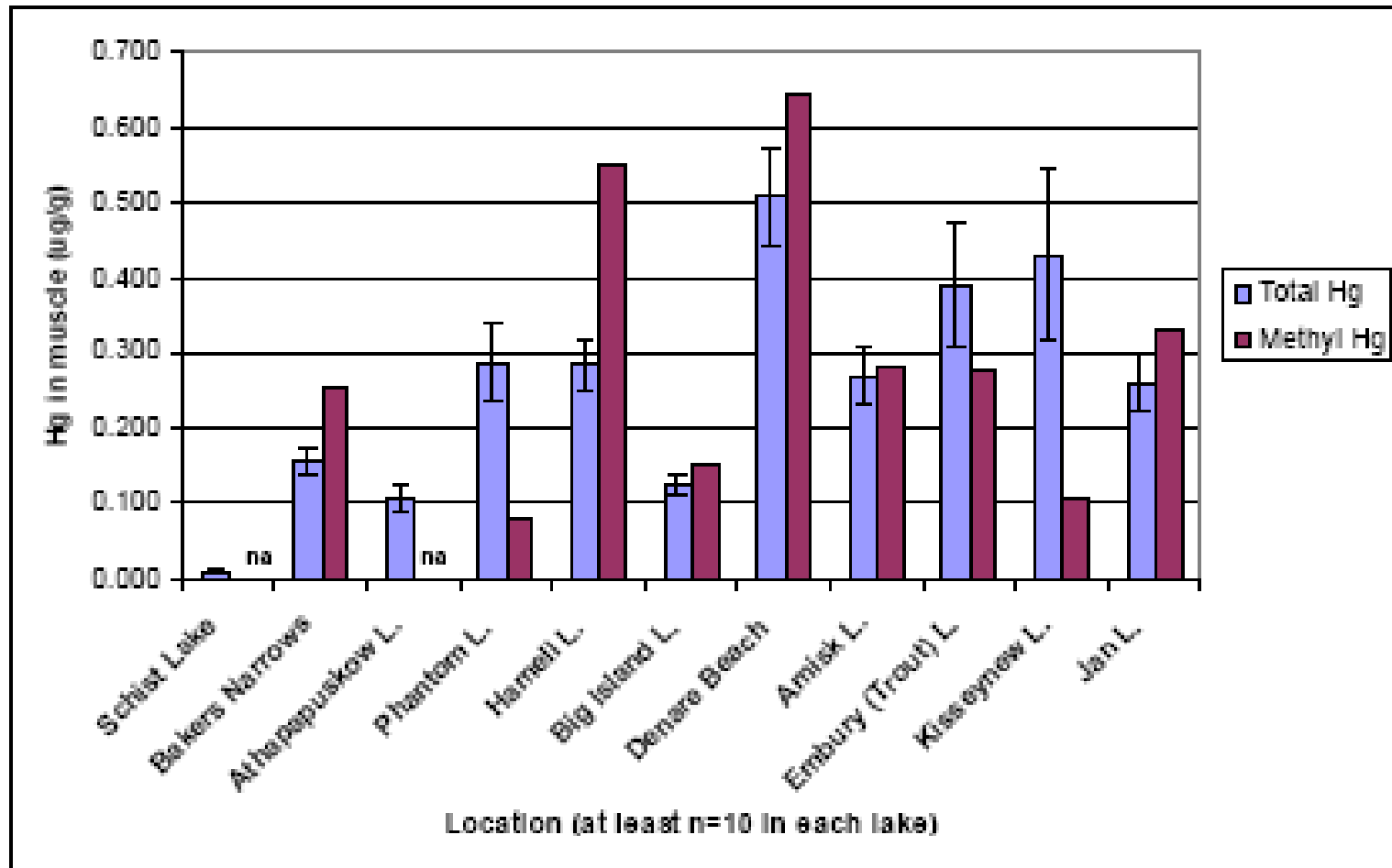


Figure 3.4 Mercury concentrations in the fillet of northern pike

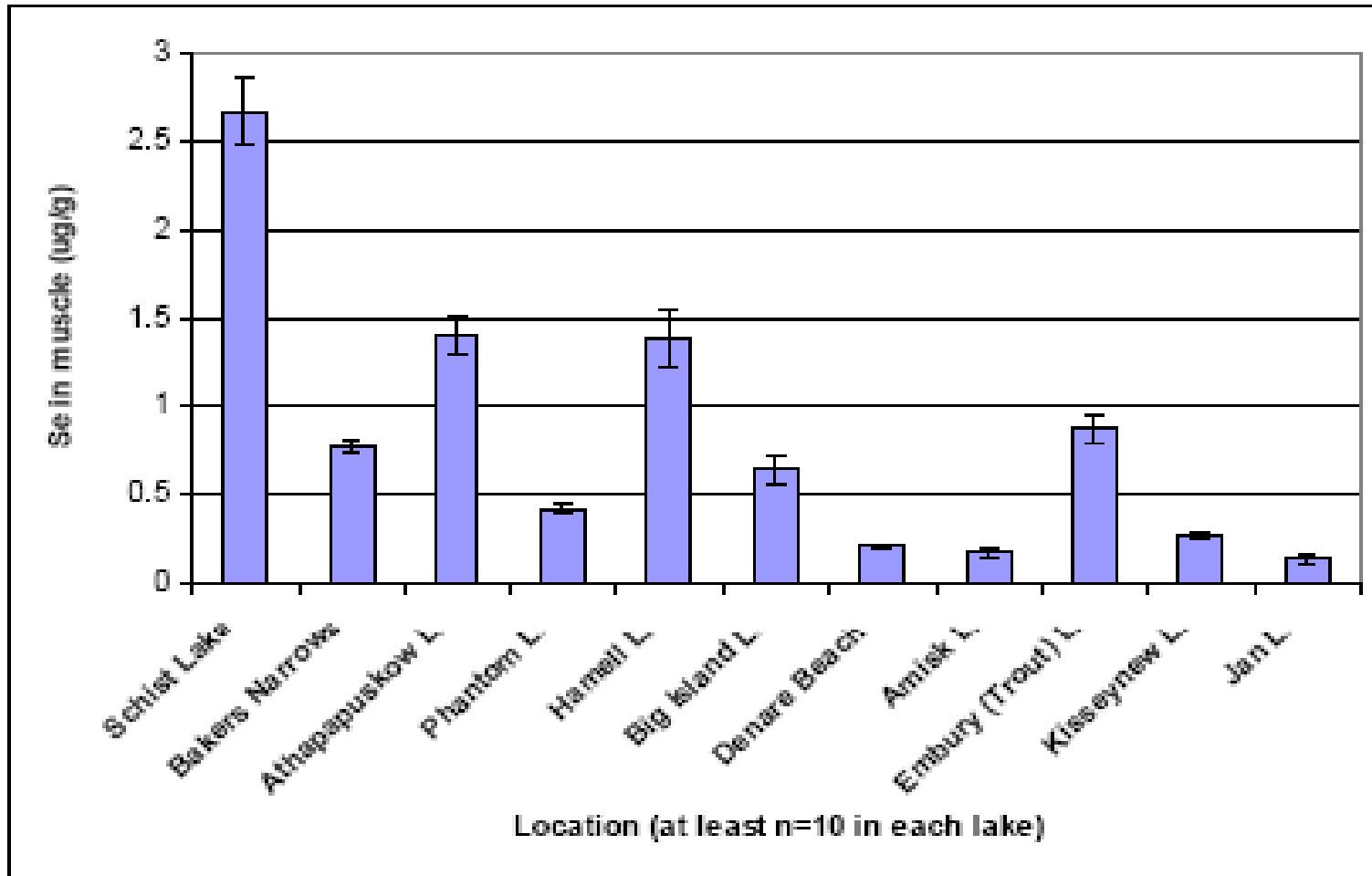


Figure 3.5 Selenium concentrations in the fillet of northern pike

**Table 3.12 Laboratory Analysis of Blueberries; HBMS Human Health Risk Assessment 2008.**

Station	Mercury (ug/g)	Arsenic (mg/kg)	Cadmium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)
FF-BB-01-1	<0.01	<0.1	0.020	1.93	0.14	<0.1
FF-BB-01-2	<0.01	<0.1	0.028	1.15	0.15	<0.1
FF-BB-01-3	<0.01	<0.1	0.032	2.84	0.20	<0.1
FF-BB-01-4	<0.01	<0.1	0.016	0.91	0.16	<0.1
FF-BB-01-5	<0.01	<0.1	0.023	1.63	0.14	<0.1
FF-BB-01-6	<0.01	<0.1	0.095	3.63	1.51	<0.1
FF-BB-01-7	0.01	<0.1	0.023	0.97	0.11	<0.1
FF-BB-01-8	<0.01	<0.1	0.064	2.07	0.35	<0.1
FF-BB-01-9	<0.01	<0.1	0.043	1.35	0.40	<0.1
FF-BB-01-10	<0.01	<0.1	0.017	0.67	0.07	<0.1
FF-BB-01-11	<0.01	<0.1	0.062	0.79	0.47	<0.1
FF-BB-01-12	<0.01	<0.1	0.030	2.14	0.31	<0.1
FF-BB-01-13	<0.01	<0.1	0.023	1.34	0.20	<0.1

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# OTHER HHRA ACTIVITIES

- Bioaccessibility-draft report reviewed by TAC
- Problem formulation
- Toxicological profiles-TAC review complete
  
- The Draft HHRA should be circulated to the TAC within the next two weeks



# UPDATE ON HHRA PROGRESS

