City of Seattle
Gregory J. Nickels, Mayor

Seattle City Light
Jorge Carrasco, Superintendent

June 15, 2009

Dear Ms. Mangold,

Thank you for your response to the May 1, 2009 mountain whitefish memorandum. The memorandum was developed in response to a request from Relicensing Participants for Seattle City Light to qualitatively describe Project effects on whitefish spawning conditions at the mouth of Sullivan Creek.

In response to your comments, we offer the following responses.

1) We do not believe there is a potential for whitefish eggs to be crushed due to increased pressure associated with changes in reservoir water surface elevations caused by Boundary Dam operations. Salmonid eggs absorb water after being spawned by the female and do become turgid or water-hardened. However, the chorion or egg capsule of salmonids remains permeable to ions, water and dissolved oxygen throughout incubation (Clarke and Hirano 1995) and increasing the depth of water will not crush the eggs. Mountain whitefish eggs have been observed at depths of up to 27 feet in large rivers (RL&L 1997). At Heart Lake, in Colorado, mountain whitefish have been found to spawn in water between 20 and 40 feet deep (Varley and Schullery 1998). In the tailrace of Mica Dam, Golder and Associates are currently studying whitefish spawning and viable mountain whitefish eggs have been recovered at depths up to 39 feet (Brad Hildebrand, Golder and Associates, pers. comm.). In conclusion, inundation of mountain whitefish eggs associated with Boundary Dam operations will not cause the eggs to be crushed.

2) We believe that showing the 10^{th}, 50^{th} and 90^{th} percentile of mainstem reservoir water surface elevations during an average water year provides sufficient detail to qualitatively discuss potential Project effects. Detailed quantification or hydraulic modeling of the effects was not requested by Relicensing Participants and we believe the presentation of average year conditions in the diagram conveys the effects of Boundary reservoir water surface fluctuations on whitefish spawning at the mouth of Sullivan Creek.

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3) Similar to our comment above, we believe that providing a general layout and orientation of Sullivan Creek portrays sufficient information for the qualitative description of Project effects that was requested by Relicensing Participants. We do not believe it necessary to calculate the effects of Pend Oreille PUD flow releases from Sullivan Lake to qualitatively describe the effects of Boundary Project operations on whitefish spawning at the mouth of Sullivan Creek.

If you wish to further pursue your request for items 2 and 3 of your May 19 response letter, please contact me within 2 weeks. Otherwise, we will attach your comment letter and this response and consider the May 1, 2009 SCL memorandum a final version.

Sincerely,

Al Solonsky

Clarke, W.C. and T. Hirano. 1995. Osmoregulation *in* Physiological Ecology of Pacific Salmon. Edited by C.Groot, L. Margolis, and W.C. Clarke. University of British Columbia Press, Vancouver, Canada. 510 pp.

R.L. & L. Environmental Services Ltd. 1997. Lower Columbia River whitefish monitoring program, 1994-1996 investigations. Report prepared for BC Hydro, Kootenay PS/PF. R.L. & L. Report No. 514F: 101 p + 8 app.

Varley, John., D and Paul Schullery. 1998. Yellowstone Fishes: Ecology, History and Angling in the Park. Harrisburg, Penn: Stackpole Books. 150 pp.

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
4601 N Monroe Street • Spokane, Washington 99205-1295 • (509)329-3400

May 19, 2009

Mr. Allan Solonski
Seattle City Light
P.O. Box 34023
Seattle, WA 98124-4023

Dear Mr. Solonski:

RE: Boundary Hydroelectric Project No 2144
Comments on the Memorandum regarding Mountain Whitefish

The Department of Ecology (Ecology) has reviewed the Memorandum that was emailed to us on May 5, 2009 and has the following comments to offer.

1. Page 2, 3rd paragraph – Is there a potential for eggs to be crushed due to osmotic pressure with the whitefish spawning at low water elevation, then having water elevations rise?

2. Page 3, 3rd paragraph – It would have been helpful to see graphs for a low water year and a high water year.

3. It would be beneficial to see several different figures calculating water surface elevations at several different water releases from Sullivan Lake (e.g. 50, 100, 200 cfs).

Ecology realizes that this memorandum was an additional request as a result of an IRA meeting, and appreciates the opportunity to comment at this time.

Please contact me at (509) 329-3450 or by email at dman461@ecy.wa.gov with further questions or comments.

Sincerely,

for Grantham
D. Marcie Mangold
Water Quality Program

DMM:slt
cc: Joan Marchioro, Ecology/ATG
James M. Bellatty, Ecology/WQP