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**DRAFT**

December 15, 2015

Steve Barton  
Chief, Columbia Basin Water Management Division  
Northwestern Division, Corps of Engineers  
P.O. Box 2870  
Portland, OR 97208-2870

Dear Mr. Barton,

One of the Council's emerging high priorities in our 2014 Columbia River Basin Fish and Wildlife Program addresses "preserving program effectiveness by ... taking into account the effects of climate change." This priority action was recommended for the program by numerous state, tribal and regional entities.

To assess the potential effects of climate change on fish and wildlife, the region will need to evaluate future hydrologic and temperature alterations in the mainstem Columbia and Snake rivers. A key aspect of such an assessment is for the federal and non-federal hydropower project operators to work collaboratively to complete the water temperature modeling capabilities in the mid-Columbia reach of the mainstem Columbia River from Grand Coulee Dam through the Hanford Reach.

As you are aware, under expected climate change scenarios, projected future changes in temperature and precipitation will alter the snowpack, stream flow, and water quality in the Columbia Basin with the following anticipated impacts:

- Warmer temperatures will result in more precipitation falling as rain rather than snow;
- There is the potential for more winter flooding, affecting salmon eggs and overwintering juvenile fish;
- Snowpack will diminish, particularly in lower-elevation watersheds, with altered runoff timing;
- Peak river flows will likely shift to earlier in the spring;

- Water temperatures will continue to rise, affecting white sturgeon and adult and juvenile anadromous fish migration, growth and survival; and
- Summer flows are likely to be lower, affecting both adult and juvenile salmon migration.

These temperature and hydrologic changes are expected to have a variety of interrelated impacts on aquatic and terrestrial ecosystems in the Columbia River Basin, as well as on the operation of the Federal Columbia River Power System. The Council's fish and wildlife program recognizes the need to assess and, where necessary, respond to the impacts of climate change, which could threaten the program's past and ongoing investments in habitat improvements in the basin. Water temperature models for the mid-Columbia reach are needed in order to complete the temperature modeling capability for both the mainstem Columbia and Snake rivers. This modeling capability will also enable assessment of the potential effects of climate change and project operations on summer water temperatures and related effects on fish and wildlife utilizing the mainstem of both rivers.

The Council understands that model development is largely completed for the Grand Coulee, Chief Joseph, Wells and Rocky Reach reservoirs. Temperature model development is currently underway by Grant County PUD in the Wanapum and Priest Rapids reservoirs and is expected to be completed in early 2016. Model development is incomplete for the Rock Island reservoir and for the Hanford Reach. We urge the Corps of Engineers to complete temperature modeling for the Hanford Reach. Additional work and collaboration by the Corps with the mid-Columbia PUDs will also be needed to link the individual water temperature models into a Columbia-Snake river system application. To enable evaluation of potential climate change effects on temperature throughout the mainstem Columbia and Snake rivers, it would be most helpful if this temperature modeling could be completed by early 2017.

In summary, the Council encourages the Corps of Engineers to expeditiously complete water temperature modeling for the Hanford Reach and to collaborate with the mid-Columbia PUDs to integrate the individual water temperature models into a Columbia-Snake river system model by early 2017. The Council also wishes to be kept apprised of the Corps' progress on this temperature modeling effort on a regular basis.

Thank you for making this temperature modeling effort a high priority.

Sincerely,

Phil Rockefeller, Chair

cc: Chelan County PUD-Steve Wright  
Douglas County PUD-Bill Dobbins  
Grant County PUD-Tony Webb  
Washington Department of Ecology-Chad Brown  
Washington Department of Ecology-Jim Bellatty  
Washington Department of Ecology-Charlie McKinney