

**Appendix 3-2 – Response to Post-Review Period Comments from Okanagan
Nation Alliance, Received September 22, 2006**

[The following document was prepared by the Proponent]

**Reviewer Reference: ONA Letter of August 18, 2006,
Received from BCEAO on August 31, 2006**

COMMENT REF. #	POST-REVIEW PERIOD COMMENT	WEPC RESPONSE
General		
a.	<p>The Approved Terms of Reference for Environmental Assessment Certificate Application (2004) document commits to provide a full assessment of cumulative environmental effects of the Project's identified residual effects.</p> <p>This is to be considered in combination with the residual effects of other projects in the cumulative effects study area.</p> <p>The ONA would like to see these monitoring and assessment requirements implemented to derive Best Management Practices and methodology to detect adverse effects and mitigate risk to fisheries abundance and aquatic resources (and where possible enhance habitat).</p>	<p>WEPC believes the EACA fulfills the requirement of the Approved Terms of Reference to provide a full assessment of cumulative environmental effects.</p> <p>WEPC's commitments include provision for post-project monitoring of our project's effects, but it is not anticipated that we would monitor the effects of other future projects.</p>
b.	<p>The proponent should focus on net environmental 'gain' rather than simply a 'no net loss' policy as a more advantageous goal for the project.</p>	<p>Avoidance and mitigation of identified potential adverse environmental effects are a fundamental goal of project environmental planning and assessment. Where feasible, WEPC has taken steps to include mitigative prescriptions and compensation proposals that contribute to a net environmental enhancement. As summarized in Section 11.3, WEPC believes the combined environmental effects of WEP, taking into consideration air, water and land values, will be positive.</p>
Fish Passage		
c.	<p>The Waneta's 62-meter maximum head on the project limit the feasibility or biological benefit of using a fish ladder. There are few fish ladders above 35 meters due to the extreme expense and complications associated with the construction (R2 Consultants Inc. 2005).</p> <p>The ONA would like to ensure WEPC is providing the resources and technology to surpass these limitations and implement a reliable, biologically sound fish passage. Until this is accomplished another method of passage is required. R2 Consultants Inc. proposed a trap and haul program be implemented. This involves trucking the fish to locations upstream of the project in a biologically sound manner. Limitations to this</p>	<p>WEPC is not proposing to implement fish passage facilities as part of project construction as it is not warranted by the fish species and site conditions present at the current time.</p> <p>As indicated in Comment Ref #33, the construction of the WEP will not preclude the implementation of future fish passage options as described in EACA Background Report # 6 in the event that anadromous fish return to the upper Columbia. WEPC is committed to fully participate in all future discussions on this topic with fisheries management agencies, First Nations, hydro system owners and other stakeholders. If in the future, the fisheries management agencies direct the establishment of fish passage up the Pend d'Oreille, WEPC</p>

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	<p>approach include fish injury and mortality, unnatural migration travel, frequency and reliability of implementation. These factors instigate questions on the sustainability of this option.</p>	<p>will be pleased to contribute to establishing fish passage facilities at Waneta.</p> <p>It is anticipated under the conditions described above, that the owner of the existing Waneta Dam and Generating facility would have the primary responsibility for establishing fish passage.</p> <p>As stated in Comment Ref. #152, trap and haul was determined by an independent expert in fish passage design to be the best option for passage of salmon species that historically migrated upstream to the Waneta site. WEPC would expect that if in the future salmon are re-introduced into the upper Columbia River, the final method(s) selected to pass adults and smolts at Waneta would be based on the best information and technology available at that time. For this reason, WEPC suggests that evaluations on the sustainability of this or other passage options are premature at this time. As indicated previously in this response, WEPC's commitment is to participate in any future discussions on the sustainability of various passage options in the event salmon return to the area and a decision is made to provide passage at Waneta Dam.</p>
<p>d.</p>	<p>R2 Consultants (2005) proposed the installation of louvers across the intakes and a collector on the right bank of the existing Waneta Generation Station as a downstream fish passage facility option.</p> <p>Monitoring to reduce fish loss and ensure the Best Management Practices option is instituted should occur prior, during and post construction. Behavioural and experimental technologies should be incorporated into the analysis.</p>	<p>See Comment Ref "c" above. Fish passage is not being implemented at this time but appropriate monitoring will be included if fish passage is decided upon in the future.</p>
Reservoir Volume and Drawdown Fluctuations		
<p>e.</p>	<p>Unnatural flow variability associated with the stranding of fish, fish eggs and a decrease in periphyton and macro-invertebrate productivity is a concern. Although the expansion proposes to reduce the need to re-regulate flows entering Canada from Boundary Dam and Seven Mile Reservoir and provide an increase in productive habitat in Seven Mile Reservoir reference area, it forecasts a loss in the productive habitat in the reference area below Waneta Dam.</p>	<p>As indicated in Comment Ref #29, experimental investigations conducted as part of BC Hydro's ongoing assessments of pool and interstitial stranding, indicates stranding rates during the summer for all fish species are quite low (Trevor Oussoren, Golder Associates Ltd. 24 August 2006, pers. comm.) Interstitial habitat types that have been shown to be associated with high rates of stranding during the winter period are very rare in the system and based on nearshore bank profiles, are likely rare to non-existent within the confluence area. As indicated in Comment Ref. # 109, WEPC's assessment of</p>

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		<p>stranding risks to listed species would be verified through a monitoring program.</p> <p>WEPC believes the significant habitat creation in Seven Mile Reservoir resulting from WEP's ability to process Boundary flow-through, should be credited as a benefit of the project. Notwithstanding, WEPC will develop a program to satisfy the requirements of the project Fisheries Authorization for compensation related to project effects on predicted losses of shallow-water habitats between Waneta Dam and the Canada-US Border. WEPC is conducting an analysis of potential compensation sites so that sufficient detail can be provided in the Fisheries Authorization application.</p>
f.	Flow Regulation should be adapted to ensure the stranding of fish, and fish eggs do not occur.	Flow variations that may appear post-project below Waneta will be a flow-through of flow variations entering Canada from Boundary Dam but will be minimized due to the convergence with the Columbia River. However some residual minor stranding associated with the shallow water habitat impact is inevitable as described in Sect. 7.4.3.6. This is the reason for the shallow water habitat compensation that is being proposed.
g.	Flow Regimes should ensure all aquatic habitats are monitored and ecosystem health is maintained.	WEPC has committed to development of monitoring programs to examine predicted project impacts on listed species and shallow water habitats. These were the only incremental effects of the project identified in the EACA that had the potential to result in negative effects on ecosystem health.
h.	Additional research and flow modeling is required to incorporate effects from climate variability and extreme weather events in predicting flow regulation outcomes.	The Meteorological Service and Environment Canada inform that the EACA addresses these areas to their satisfaction. They also recognize that there is always some uncertainty in descriptions of the present climate and in predictions of the future climate. In the specific context of this project, these uncertainties are manageable and should have little direct impact.
i.	Although post expansion changes in low velocity habitat throughout the year are small, these infrequent changes are not expected to negatively influence white sturgeon's use of the eddy, additional monitoring and analysis is required.	For the reasons provided in Comment Ref. #123, WEPC agrees with the view that the post expansion changes are small and are not expected to negatively influence white sturgeon use of the eddy. Notwithstanding, we have proposed a monitoring/research program that is intended to provide greater certainty.
j.	A planned response to adjust flow regimes	WEPC's analysis does not indicate the project

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	<p>should be drafted to ensure the white sturgeon population incurs no adverse effects.</p>	<p>will have any adverse effects on white sturgeon. Therefore, WEPC cannot reasonably be expected to develop a “planned response to adjust flow regimes” in the absence of any data to indicate what flow regimes should be adjusted. In addition, flows in the Canadian section of the Pend d’Oreille River are coordinated by BC Hydro under the Canal Plant Agreement (CPA). Under the CPA, BC Hydro is delegated the responsibility to manage the flows through Waneta and the Waneta Expansion facilities in order to optimize system generation. Any restrictions on flows as a result of various license conditions (such as the WSFAP), are incorporated into CPA Operating Procedures which BC Hydro must abide by in their management of the system.</p>
Total Dissolved Gas Pressure:		
<p>k.</p>	<p>The impacts of total dissolved gas pressure (TGP) are a concern. The Seven Mile spillway was designed to reduce the incidence of gas supersaturation (Ministry of Supply Services 1991). Historical reports indicate TGP assessments did not determine the efficiency of the Seven Mile spillway in reducing dissolved gas levels entering Waneta reservoir (Ministry of Supply Services 1991).</p> <p>The Waneta Hydroelectric Expansion Project (2004) report found the database on TGP production at Waneta Dam to be insufficient to allow accurate predictions of WEP benefits to TGP reduction.</p>	<p>The model used to assess impacts of BC Hydro’s Seven Mile operation incorporates a gas stripping function based empirically on monitoring data obtained over spill periods at Seven Mile Dam. This model was used to estimate TGP impacts from Seven Mile and all other facilities in a broadly distributed report prepared for the CRIEMP program. The equations used and dissolved gas levels entering Waneta Reservoir for the analysis presented in the EACA were predicted from this model which has been widely reviewed.</p> <p>EACA Background Report #5 incorporates the most recent 2004 monitoring data that were used to further develop the TGP production model at Waneta spillways. The report states: “The relative benefits of reducing TGP discharge by diverting flow through the powerplants with the new proposed expansion project are supported by this analysis.” Consequently, we believe the analysis presented meets the standards for predicting TGP reduction effects from WEP. The analysis presented used a model based on a monitoring data base similar to that used in the Brilliant Expansion Project and the environmental analysis for the Arrow Lakes Generating Station.</p>
<p>i.</p>	<p>Likewise the amount and location of TGP data sets used to extrapolate future outcomes is not adequate to clearly assess impacts post expansion in the 2006 model. Additional monitoring and continuous automated datasets</p>	<p>As explained in Comment Ref “k”, the current data set is adequate to predict the general impact of TGP on aquatic life as a result of WEP.</p> <p>Owner’s Commitment #36 in the EACA states</p>

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	<p>are required to verify that the new powerplant does not result in increased TGP. Unanticipated air entrainment is one factor to be assessed. Similarly, the existing TGP model needs to be recalibrated to account for potential changes in TGP formation because of the new tailrace location of the WEP.</p>	<p>that a TGP monitoring program will be conducted once WEP becomes operational to verify the WEP does not increase TGP and to obtain data to recalibrate the existing TGP production model. This will also ensure unanticipated air entrainment does not produced excessive levels of TGP.</p>
Habitat Availability and Suitability		
<p>m.</p>	<p>The Waneta Hydroelectric Expansion Project Approved Terms of Reference for Environmental Assessment Certificate Application 2004 requested a thorough assessment of the changes to aquatic habitat availability and suitability encompassing the Waneta Dam to the U.S. border, the Confluence, and the Columbia River upstream to the Fort Shepherd Eddy. Multiple sites historical datasets duration and frequency is inadequate to meet the initial goal. Baseline parameters capturing adequate water quality data to depict aquatic health within these areas are required pre-project. The number of measurements should reflect the annual and seasonal variation in all areas.</p>	<p>WEPC is uncertain as to the issue being raised in this comment. WEPC has conducted extensive modeling, field studies, and analysis that in our opinion, provides a thorough assessment of incremental project changes to aquatic habitat availability and suitability in the Project's TOR-approved primary aquatic study area. Baseline water quality data in the areas mentioned are monitored through the Columbia River Integrated Monitoring Program (CRIEMP) and provide an adequate baseline against which potential post-project project effects can be determined.</p>
Waneta Reservoir Habitat Potential		
<p>n.</p>	<p>No stocking of the Waneta reservoir has been attempted because of its very high flushing rate and low productivity (Ministry of Supply Services Canada 1991). The Waneta reservoir is oligotrophic due to the low phosphorus and nitrogen content. The low productivity, poor access and very low numbers of sport fish in the reservoir limit recreational potential.</p> <p>Temperature in the reservoir is well mixed, isothermal with high summer water temperatures. Temperatures up to 25 degrees have been measured below the dam. Elevated water temperatures are a limitation to potential fisheries habitat.</p>	<p>WEPC agrees with these statements. The elevated water temperatures do limit fisheries potential of the Waneta headpond and is a main factor limiting use of the headpond by species like rainbow trout.</p>
Sedimentation (Contaminated Sediments):		
<p>o.</p>	<p>The containment of metal-contaminated sediments within the work area is a concern.</p> <p>Monitoring and data assessment within the Waneta Hydroelectric Expansion Project EAC found all sediment sample concentrations exceeded the CCME criteria and BC Sediment Quality guidelines for arsenic, cadmium, lead</p>	<p>This concern is addressed in Comment Ref. #72. WEPC will comply with all regulatory requirements relating to removal of contaminated sediments from the forebay and will submit its detailed plans for excavation, remediation and monitoring to MOE as part of the approvals process for this specific work. WEPC will interact with the BC MoE, Land</p>

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	<p>and zinc. One sample exceeded the CCME criteria and BC sediment quality guideline limits for mercury. Sediment sample sites were located in the Forebay as shown in Figure 3-2 Project Setting – Environment, Environmental Assessment Certificate Application Waneta Hydroelectric Expansion Project (2006). The potential for increased levels of suspended sediment to enter the Waneta headpond, the Pend d’Oreille River downstream of the Waneta Dam, and the Columbia River downstream of the Confluence (Waneta Expansion Power Corporation 2004) is an area of concern.</p>	<p>Remediation Section in Victoria as warranted in the course of planning and delivering this activity.</p> <p>The Contractor will be required to excavate all contaminated sediment necessary to minimize environmental impacts on fish related to the construction of the powerplant intakes. The Contractor will be required to place a layer of clean capping material over any remaining forebay sediments that could be potentially mobilized during post-construction powerplant operation. Monitoring will be conducted to confirm sediments are not mobilized.</p>
p.	<p>The potential for re-suspension of headpond sediments in the intake excavation area and the presence of heavy metals in these sediments is also a concern.</p>	<p>As discussed in Comment Ref. #74, WEPC has recognized that the disturbance of existing forebay sediments during intake construction, and subsequent powerplant operations, has the potential to re-suspend contaminants with possible adverse effects on fish and fish habitat. To address this concern, management of sediment removal from the Waneta forebay to avoid possible re-suspension will be undertaken in accordance with applicable prevailing standards. The sediments will be removed with a cutting-head and suction system specifically designed to avoid re-suspension during sediment excavation.</p> <p>EACA Background Report No. 11 provides more information on sediment removal.</p>
q.	<p>The proposed risk based approach by WEPC (2004), of sediment suspension on the downstream environment, is required.</p> <p>Likewise, specific procedures for removal, handling and disposal of potentially contaminated sediments should be implemented.</p> <p>The Waneta Expansion Power Corporation’s commitment to adhere to Golder Associates (2005) recommendations to meet the aquatic component of the Remediation Plan for the metals-contaminated sediments in the Waneta forebay will aid in mitigating risk.</p>	<p>This comment relates to work already described in the EACA. See also Comment Ref #74 and Comment Ref “o” above.</p>
Habitat Conservation and Restoration		
r.	<p>A commitment to assess habitat throughout the construction phases and long-term cumulative effects of the project is required. Funds should be allocated to support conservation and restoration projects.</p>	<p>WEPC’s commitments to monitor the effects, both direct and cumulative, of WEP construction on existing aquatic habitat are described in detail in the OERC (Appendix 9A of the EACA). Commitments to assess effects of project operations on potentially affected aquatic</p>

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		<p>habitats are provided through a) the monitoring component of the shallow water compensation program and b) the monitoring/research program offered to investigate project related changes on white sturgeon habitats. If the agencies choose to use the funding offered for the latter program for research, then this would be a direct allocation to conservation and restoration of white sturgeon.</p> <p>A program to support terrestrial conservation and restoration programs is described in Section 6.9.2.</p>
Explosives		
s.	<p>The use of explosives within the project area should be selected to ensure no additional risks are presented to aquatic resources during blasting. Emergency measures methods should be established prior to blasting based on aquatic risk response procedures.</p>	<p>WEPC believes our impact avoidance and mitigation measures, using proven methods, represents everything reasonably possible to reduce the potential for harm to aquatic resources in the construction area during blasting. For example, the protection of sturgeon during blasting is addressed in Comment Ref # 92, 93, 94, 95, 101, 102, & 106 of the main response document.</p> <p>Section 9.2.3 of the EACA outlines the role of the Project Environmental Monitor (PEM). “Blasting having potential to harm fish, property or the public; and in-stream work having potential to harm fish” are specifically identified as high risk activities to be monitored. The intent of Appendix 9A D4.2(h) is to require the contractor to have his environmental staff monitoring the described in-stream work at all times.</p> <p>Procedures to address accidents and malfunctions that could affect aquatic and other resources are described in EACA Section 9.4.</p>
Special Precautions for Listed Species		
t.	<p>Additional precautions including Best Management Practices methodology to mitigate the risk to SARA identified species and habitat. COSEWIC species that are not yet listed under SARA should also be included. It is understood that white sturgeon are expected to be listed in the Kootenay Columbia water systems in the near future. Associated project plans should be circulated that illustrates how the project will address this likely possibility.</p>	<p>Our assessment provided in the EACA indicates a low risk to all listed species (both Provincially and Federally listed) from project operations. However, WEPC has committed funding for white sturgeon monitoring or research related to predicted project effects. Our analysis of potential effects of the project on white sturgeon was based on the assumption this species would be listed and therefore, WEPC feels it has addressed this possibility.</p>

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Valued Ecosystem Components		
u.	<p>Valued Ecosystem Components are recognized as having additional sensitivity to activity in and surrounding their habitat.</p> <p>Additional monitoring during construction is required to mitigate risk.</p>	<p>WEPC considers that for all components of construction, the OERC objectives, criteria, and requirements will be sufficient to mitigate effects on VEC's to acceptable levels. In our opinion, monitoring programs proposed will be sufficient to identify if the processes implemented through the OERC are effective at avoiding or mitigating potential impacts.</p>
v.	<p>Emergency procedures response plans should be established to ensure adequate precautions are taken in times of unforeseen circumstances.</p>	<p>As above, the OERC provides the overall procedures for dealing with environmental emergencies and addressing any emergencies in the most appropriate way. Monitoring of terrestrial resources in active construction areas is included, with provision for immediate reporting of incidents that could cause harm.</p>
w.	<p>Post construction monitoring of cumulative effects should be incorporated into the monitoring outline. Funds should be allocated to ensure data is captured and analyzed post construction.</p>	<p>WEPC has proposed a series of post-project monitoring programs as outlined in Section 11.1.3 of the EACA. The Response to Review Period Questions and Comments provides further information on certain of the Owner's project impact monitoring commitments. Post-project monitoring by its nature will capture cumulative effects. Direct effects in most cases will be determined from comparison to baseline conditions. The monitoring referenced in WEPC's EACA and Response Document will be funded by WEPC.</p>
Future ONA Participation		
x.	<p>The Okanagan Nation Alliance has the professional fisheries and aquatics capacity to be involved in monitoring and evaluating different components of the project. The ONA would like to explore these opportunities with the proponent. It is also imperative that the Nation continues to be involved in any post-EAO approval processes and that CPC facilitates this requirement.</p>	<p>As stated in Comment Ref #10, WEPC will enter into discussions with the ONA regarding their internal expertise and will undertake to inform the ONA of any opportunities to provide environmental monitoring services, which WEPC may contract directly.</p>