

BEAR RIVER BAND of the ROHNERVILLE RANCHERIA

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February 18th, 2022

Re. DEIR -Nordic Aquafarms Aquaculture Project

We are pleased to see that the proposed project will include substantial remediation and restoration efforts, and that testing will include both screening techniques and qPCR (testing for specific viruses). However, the report doesn't yet fully address the frequency and level of testing (for example, a list of viruses) for known and emerging viruses (Appendix D), detailed plans for timing of testing should a pathogen be detected, or a cost benefit analysis of alternative uses of effluent water.

Immune responses that align with gene expression profiles have been linked to mortality in wild migratory smolts and adults (Miller et al. 2011; Jeffries et al. 2014), and to salmon mortalities of uncertain cause in marine net pens in British Columbia (Miller et al. 2017; Di Cicco et al. 2018). These data suggest that decreased survival of migratory salmon in the Pacific Northwest could be linked to viruses, and that the expansion of salmon aquaculture in British Columbia, which operate in the same waters through which wild Pacific salmon migrate (Morton et al. 2017), could have contributory mortality effects.

As for testing, multiplexing is desirable, but if utilizing the qPCR assay, necessitates the use of probes with several different fluorophores. Digital PCR (dPCR), a more recent method of detecting and quantifying nucleic acids is advantageous because it allows for the direct absolute quantification of virus genome copy numbers per sample without requiring external calibration; each reaction can then be recorded as either positive (fluorescent) or negative, and unlike qPCR, results are accurate at very low target numbers.

The Bear River Band of the Rohnerville Rancheria would like to see further consideration of alternatives that avoid release of effluent to the wastewater stream, and a more intense monitoring plan that includes appropriate testing (possibly dPCR testing, upon the advice of biologists) for known and unknown viruses and other pathogens. There are several potential uses of the treated effluent water; some of these are discussed in the report. Commercial viability of alternative uses of treated effluent should include the risk cost associated with releasing effluent through the pipe as proposed.