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Laboratory experiments on stratified flow through a suspended porous fence SARAH DELAVAN, University at Buffalo, The State University of New York, ROGER NOKES, University of Canterbury, DAVID PLEW, NIWA — This study explores stratified flow through a suspended, porous, fence-like obstacle to simulate flow through fish farm cages, mussel farm rope suspensions, flow through suspended aquatic vegetation, underwater energy production structures, or windbreak and wave break fencing. Laboratory experiments were performed in a density stratified, stationary flume with a suspended porous fence model using a particle tracking velocimetry (PTV) system. Experiments explored the effect on the fluid of the fence depth to total depth ratio, the system Richardson number, and the porosity of the fence. Preliminary results suggest that the density stratification of the fluid inhibits vertical fluid motion, that fence porosity greatly controls the vertical mixing of the fluid, and that there may be an optimal fence depth to total depth ratio for full development of the system flow structures.

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